Final

Residential Removal Action Work Plan

For Residential Properties Located Near the Former Celotex Site 2800 South Sacramento Avenue Chicago, Illinois 60623

Prepared for

Honeywell International Inc.

June 2007

CH2MHILL

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Acronyms and Abbreviations

AOC	Administrative Order on Consent
BAPEQ	Benzo(a)pyrene equivalent
bgs	Below Ground Surface
CQP	Construction Quality Plan
Celotex	Celotex Corporation
CIC	Community Involvement Coordinator
EE/CA	Engineering Evaluation and Cost Analysis
HSP	Health and Safety Plan
Honeywell	Honeywell International Inc.
IDOT	Illinois Department of Transportation
Main Site	Former Celotex Site located at 2800 South Sacramento Avenue
Monarch	Monarch Asphalt
PAH	Polycyclic Aromatic Hydrocarbon
PSI	Pound per Square Inch
RPM	Remedial Project Manager
SACM	Superfund Accelerated Cleanup Model
SC	Safety Coordinator
SVOC	Semi-volatile Organic Compound
SWP3	Storm Water Pollution Prevention Plan
TACO	Tiered Approach to Corrective Action Objectives
T&DP	Transportation & Disposal Plan
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

SECTION 1

Introduction

This work plan, prepared on behalf of Honeywell, presents the scope and proposed approach to conduct removal activities at residential properties near the Former Celotex Site (Main Site) located at 2800 South Sacramento Avenue in Chicago, Illinois (the Site). The location of the Main Site and residential removal action area are illustrated on Figures 1-1 and 1-2.

This work plan provides a description of the tasks that will be performed to complete the residential removal actions. The following site-specific documents provide further detail for portions of this work plan and are provided as Appendices:

- Pre-and Post-Construction Survey Property Checklists (Appendix A)
- Health and Safety Plan (HSP) (Appendix B)
- Construction Quality Plan (CQP) (Appendix C)
- Transportation & Disposal Plan (T&DP) (Appendix D)
- Storm Water Pollution Prevention Plan (SWP3) (Appendix E)

1.1 Site Background

1.1.1 Site Description

The residential removal action area consists of individual residential properties within an area bounded by 26th Street to the north, Kedzie Avenue to the west, 31st Street to the south and Sacramento Avenue to the east. The residential study area encompasses approximately 58 acres not including the former Celotex site, which consists of 20 acres formerly owned by The Celotex Corporation (Celotex) and currently owned by the 2600 Sacramento Corporation, and a 2-acre parcel to the southwest sometimes referred to as the Palumbo parcel and currently owned by Monarch Asphalt (Monarch).

The Site is situated in a multi-use area that includes residential, commercial, manufacturing, governmental, and industrial establishments. The Cook County Correctional Facility is located east of the Main Site, on the east side of Sacramento Avenue and the former Atchison, Topeka & Santa Fe railroad line crosses a portion of the area to the northwest. Residential and commercial properties are located north and west of the Site and industrial property is located to the south. The Chicago Sanitary and Ship Canal is located approximately 1,500 feet south of the Site.

1.1.2 Main Site History

The Main Site was used for making, storing and selling asphalt-roofing products. Former operations at the Main Site during the approximate period of 1911 to 1989 may have resulted in the release of polycyclic aromatic hydrocarbons (PAHs) to the ground and into the air. Facility closure (1989), demolition of the Main Site (1993), and subsequent actions have been completed and it has been determined that there are no known ongoing releases, associated with historical

operations, occurring from the Main Site. The Main Site is currently surrounded by a chain-link fence with a single entrance located at the main gate on Sacramento Avenue. In 2002, the 2600 Sacramento Corporation bought the 20-acre portion of the Celotex property.

Currently, the 20-acre portion of the Main Site is elevated compared to surrounding grade due to the presence of Cover, Fill, and Cap materials placed at the site following facility demolition. Following completion of an EE/CA by Honeywell, USEPA issued an Action Memorandum ("March 2005 Action Memorandum") finding that subsurface contaminants should be addressed by the placement of a 2-foot gravel cap on the Main Site (to the extent one was not already in place) and the recording of certain restrictive covenants. Honeywell and USEPA subsequently entered into a second Administrative Order on Consent ("2006 AOC") whereby Honeywell agreed to perform the activities set forth in the March 2005 Action Memorandum. A Main Site evaluation was conducted in 2006 to assess current Main Site conditions including the thickness and disposition of the Cover, Fill, and Cap material.

1.1.3 2006 Residential Soil Sampling

Residential soil sampling was conducted in 2006, to characterize the residential study area surrounding the former Celotex Site. The 2006 sampling supplemented previous residential sampling efforts. USEPA defined the residential area requiring sampling as within two areas: (1) Northeast (NE) quadrant defined by the boundary set by Whipple Avenue, Sacramento Avenue, 28th Street, and 26th Street and (2) Southwest (SW) quadrant bounded by Troy Street, Albany Street, 28th Street, and 31st Street. In addition, Honeywell performed sampling within a larger area that includes the Northwest (NW) area defined by the boundary set by Troy Street, Kedzie Avenue, 28th Street, and 26th Street, although no connection has been made between the larger area and the Main Site. The residential study area comprises those residential properties located within the area bounded by 26th Street to the north, Kedzie Avenue to the west, 31st Street to the south, and Sacramento Avenue to the east.

Surface and shallow subsurface soil was sampled from the residential properties from areas of the properties with exposed soil. Soil samples were analyzed for polycyclic aromatic hydrocarbons (PAHs). The specific compounds reported consist of the following seven PAHs that contribute to the benzo(a)pyrene equivalent (BAPEQ) concentration:

- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Chrysene
- Dibenz(a,h) anthracene
- Indeno(1,2,3-cd)pyrene

Surface soil samples were collected from the 0 to 6-inch depth interval. To evaluate the vertical extent of PAHs, shallow subsurface soil samples were collected from the 6 to 24-inch and 24 to 36-inch depth intervals. Composite samples from each depth interval were collected to support a yard-specific result. One composite sample from each of the three depth intervals was collected from both the front yard and backyard of each residential property where both yards had exposed soil areas present.

Parkways (the landscaped/grassed area between the residential sidewalk and street) were excluded from sampling due to the likelihood for high bias associated with these areas being used for roadway snow accumulation. Although parkways were not sampled, if residential lots adjacent to a particular parkway are identified for removal action, the parkway will be considered for removal action as well. The USEPA mandated cleanup of soils with BAPEQ results greater than 10 ppm in the northeast (NE) and southwest (SW) quadrants of the residential study area. Honeywell has agreed to remove additional soils above 2 ppm BAPEQ to a maximum depth of three feet within both the NE and SW quadrants, and NW area. Decisions as to how much soil is removed at individual properties and within the adjacent parkways is based on the sampling results and property configuration.

If access agreements are obtained for additional residential properties located within the defined residential study area, these properties will be considered for soil sampling within exposed soil areas. The soil sampling would be conducted in accordance with the USEPA-approved Residential Soil Sampling Work Plan (CH2M HILL, 2006). Following reporting of these additional soil sampling results, those residential properties with BAPEQ results above 2 ppm would be identified for removal action by addendum to this Removal Action Work Plan.

1.2 Objectives of the Residential Removal Action Work Plan

At the time of the publication of this Work Plan, 141 residences are planned for removal action, with the potential to conduct removal action at up to 178 residential properties depending on additional access agreements received from property owners and individual property status.

The primary objectives of the Residential Removal Action Work Plan are to identify the procedures that will be used to:

- Remove PAH impacted soil from 141 to 178 residential properties, and the adjacent parkways, to a depth of 1-3 feet below ground surface, as needed,
- Restore those portions of the residential properties impacted during the removal action to a condition similar to the condition immediately prior to the commencement of the removal action, and
- Prepare a Residential Removal Action Completion Report to document the removal activities.

1.3 Project Team Organization

Following USEPA approval, CH2M HILL will be the lead engineer responsible for implementing the proposed actions within this work plan under the direction of Honeywell. Communications will occur regularly among Honeywell, CH2M HILL, and USEPA, with the following key points of contact as follows:

- USEPA Remedial Project Manager – Ms. Jena Sleboda
- Honeywell Remediation Manager – Mr. Chuck Geadelmann
- CH2M HILL Project Manager – Mr. Joel Wipf

USEPA has primary responsibility for community involvement for the residential removal activities. Honeywell will provide support to USEPA as requested by the Remedial Project Manager (RPM) and Community Involvement Coordinator (CIC) and will coordinate activities through USEPA's RPM and CIC.

1.4 Work Plan Organization

This Residential Removal Action Work Plan is organized as follows:

Section 1, Introduction, provides general background information regarding the site and residential removal action, summarizes the objectives of the removal action, and outlines the project and work plan organization.

Section 2, Scope of Work, identifies the objectives and describes the proposed residential removal action program. These descriptions include site-specific residential removal action tasks.

Section 3, Project Completion, identifies the procedures for demobilization and residential landscaping maintenance.

Section 4, Residential Removal Action Completion Report, presents the general outline of the Residential Removal Action Completion Report.

Section 5, Project Schedule, presents the anticipated residential removal action schedule based on the scope of the project, and identifies key activities and delivery dates.

Section 6, References, presents a listing of works referenced during compilation of the Residential Removal Action Work Plan.

SECTION 2

Scope of Work

2.1 Property Selection

The Action Memorandum requires the removal of soils with BAPEQ results greater than 10 ppm in the NE and SW quadrants of the residential study area. Honeywell will perform the removal action of the northwest (NW) quadrant of the residential study area as well. The residential removal action will remove soils above 2 ppm BAPEQ to a depth of 1-3 feet below ground surface (bgs) from residential properties within the three quadrants. These areas combined comprise the residential study area shown on Figure 2-1.

The quantity of soil to be removed from each property is based on the results of the 2006 residential soil sampling supplemented by previous sampling where relevant, and the depth of BAPEQ concentrations above 2 ppm at each individual property. Individual property activities will include the parkway area located between the front yard and street of each property.

Table 2-1 summarizes the location (i.e. front/back yard, parkway, etc.) and depth of excavation for each residential property and associated parkway. At the time of publication of this work plan, 140 residential properties are scheduled for removal action (based on sample results and access agreements), with the potential of up to 178 residential properties to undergo removal action.

2.2 Community Involvement Approach

Pre-construction survey meetings will be conducted with each of the individual property owners and representatives from Honeywell and/or its contractors. The meetings will be conducted at the individual properties to discuss schedule, access, the removal action process, property-specific restoration, safety, security, and communication. As part of the meeting, Pre-Construction Property Checklist Survey will be completed (Appendix A). The meetings will be conducted with at least one bi-lingual participant and relevant documentation will be available in both English and Spanish where necessary.

A residential pre-construction meeting will be conducted with each of the individual property owners and representatives from Honeywell and/or its contractors approximately 7 to 10 days prior to the start of removal action at the individual property. At this meeting, a copy of the edited Pre-Construction Checklist Survey from the previous meeting, along with a copy of the construction drawing will be provided to each property owner to document the work to be conducted. The meeting will also be used to discuss and confirm the actual schedule, access, restoration, and security issues and to document pre-construction property conditions.

A thorough effort will be made to protect the health and safety of the community and the workers throughout the removal process. Residential excavations will be secured with orange plastic construction barrier fencing, a minimum of 36-inches high around the perimeter of the

excavation areas using steel 'T" posts spaced at 6-foot intervals to separate pedestrian traffic from the work. All storage, staging, and laydown areas will be secured with a minimum 6-foot standard temporary security fence. Appropriate signage, in both English and Spanish, will be displayed in storage, staging, and laydown areas. Barricades and lighting will be provided as necessary to prevent unauthorized entry to construction areas and to ensure public safety.

Work zones shall be clearly defined by orange construction fencing during removal action activities – site residents will be requested to not enter work zones during remedial action activities. If a resident inadvertently enters the exclusion zone or comes in contact with contaminated materials, decontamination materials will be available for residential use. Additional information regarding resident and worker protection is located in the HSP in Appendix B.

2.3 Pre-Construction Activities

A site-specific Health and Safety Plan (HSP) has been developed for the residential removal actions (Appendix B). Specifically, the HSP outlines the requirements for a daily health and safety meeting, required personal protective equipment, site-specific hazards, air and dust monitoring specifications, and decontamination procedures. These procedures are to be followed to ensure the work is completed safely and with no adverse health effects to workers or the community. In addition, air and dust monitoring will be conducted as described in Section 2.3.1 with further details contained in the HSP.

A Construction Quality Plan (CQP) has been developed to establish the quality assurance procedures to be followed during the removal action activities. The CQP provides general procedures for observing construction activities and documenting that construction has been completed in accordance with this work plan and quality assurance procedures. The CQP is provided in Appendix C.

A Storm Water Pollution Prevention Plan (SWP3) has been developed for the residential removal action activities and is provided in Appendix E. The SWP3 provides an overview of construction activities and includes procedures that will be implemented during construction activities to prevent or reduce pollutants in storm water discharges.

2.3.1 Air and Dust Monitoring

Air and dust monitoring will be conducted during removal action implementation activities to ensure that levels are maintained below permissible levels to protect workers and the public.

Real-time dust measurements will be collected at periodic intervals within the exclusion zones and ambient dust levels will be monitoring on a continuous basis at site boundaries. In addition, perimeter air samples will be collected periodically for analysis of PAHs. Time-integrated air samples will be collected and analyzed in accordance with low volume sample methods as applicable for PAH samples, and analyzed by a laboratory that is accredited for those methods.

Perimeter air samples will be collected at various locations throughout the removal action area. Up to four perimeter samples may be collected during each sampling event. At a minimum, one sample will be collected directly downwind, based on morning wind directions, at the outer perimeter of the work zone and one collected upwind. Additional samples may be collected at

the outer perimeter of the work zone in a crosswind location. The wind direction will be recorded by field staff on an hourly basis.

Additional information regarding the site-specific action levels, permissible exposure limits (PELs) for PAHs and dust, and monitoring requirements are included in the HSP (Appendix B).

2.3.2 Pre-Construction Property Surveys

During the pre-construction survey, a "Pre-Construction Property Survey Checklist" will be completed to document the existing conditions at each individual residence. A copy of a Pre-Construction Checklist Survey template is provided in Appendix A. During the subsequent pre-construction meeting, digital photographs or a video recording of the property may be used to document the physical condition of vegetation, structures, sidewalks, and pavements within the individual property work area.

A copy of the Pre-construction Agreement, created from the Pre-Construction Checklist Survey, along with a copy of the construction drawing will be provided to each property owner prior to the start of the property removal action. A sample Pre-construction Agreement template is provided in Appendix A. Documentation provided to property owners will include a Spanish translation.

2.3.3 Mobilization

Construction equipment and materials, and temporary storage (as needed) of property owner and resident belongings will be stored at nearby secured staging, storage, and laydown areas. Pending establishment of an access agreement with Monarch, the primary equipment staging area will be located at the 2-acre Monarch Asphalt property, in the southwest portion of the Main Site. The staging area will include temporary parking, field trailers, portable sanitary facilities, and laydown of equipment and materials. Additionally, a separate vehicle decontamination area and soil staging area will be established.

All storage, staging, and laydown areas will be secured with a minimum 6-foot standard temporary security fence. Appropriate signage will be displayed in storage, staging, and laydown areas. Barricades and lighting will be provided as necessary to prevent unauthorized entry to construction areas and to ensure public safety.

A Transportation and Disposal Plan (T&DP) has been established to guide the transportation and disposal of all wastes, restoration materials, and stockpiling of excavated soils generated during the work. A copy of the T&DP is provided in Appendix D.

2.3.4 Site Preparation

The pre-construction survey checklist and meeting, that was completed and agreed upon prior to mobilization to each property, will determine and document the extent of site preparation required.

Site preparation may include, as necessary, the removal or protection of trees, shrubs, vegetation, fencing, and encumbrances to soil excavation. The excavation area will be staked by a surveyor to establish pre-construction control points, existing elevations, and to delineate the excavation area at each property. Orange safety cones, caution tape, and orange plastic

construction barrier fencing will be placed around the excavation at the end of each working day.

Private property items such as swing sets, picnic tables, or other obstructions moved from the site, as necessary and will be labeled, securely stored, and returned to the property upon completion of restoration. Private property that will not be moved during site preparation will be protected from soil with a plastic covering or similar means. Necessary measures (described further below) will be implemented to protect existing buildings and utilities from construction activities.

Stormwater runon/runoff controls will be installed to prevent migration of storm water into the work area of from the work area to storm sewers, street gutters, streets, sidewalks, and driveways. Silt fencing will be installed at excavations, as necessary to minimize soil erosion. Silt fencing will also be placed around the perimeter of the Main Site, as necessary in areas located near the residential removal action, specifically along: Whipple, 28th Street to the east of Whipple Avenue, Albany Street and Troy Street (between 28th and 29th Street).

2.3.5 Utility Locate

A commercial utility clearance contractor will be utilized to clear utilities at each property prior to mobilization. In addition, utility clearance will also be requested from the local one-call system (DIGGER) prior to mobilization. Utilities will be verified as marked prior to excavation on each property and protected from damage during construction. Hand digging will be utilized to locate a utility line when located by DIGGER within 2 feet outside of the excavation.

2.4 Removal Action Implementation

It is estimated that removal action implementation at an individual property will require between 5 and 10 days with follow on work for watering and tending to landscaped areas. This process will involve site preparation (discussed in Section 2.3.3 above), excavation, transportation and disposal, backfilling/compaction, and property restoration as described in the following subsections.

2.4.1 Excavation

Excavation depth, ranging from 1 to 3 feet bgs in exposed soil areas, at each property is based on the BAPEQ results from the 2006 residential soil sampling, supplemented by previous sampling where relevant. The areas and depth of excavation at each property are identified in Table 2-1.

The access to soil excavation areas will be determined on a property-specific basis. Width of access may be limited in some locations and may not allow for the use of conventional equipment. The scope includes the use of conventional mechanical equipment, vacuum excavation, and/or manual equipment, depending on the width of access to the property. Where possible, conventional mechanical excavation using a mini-excavator, a loader, and dump trucks, will be utilized. Vacuum excavation will be completed using one or two truck-mounted positive displacement or fan vacuum pumps with inlet air filers and HEPA exhaust treatment unit. The soil will be agitated with various hand tools so that it can be vacuumed through a 6-inch suction line into the vacuum box.

Vacant lots will be utilized where practical and feasible as temporary access areas for back yards. If these lots are used for overnight staging, a six-foot chain link fence with a fabric screen will be installed around the perimeter with vehicle gates to the streets and side lots for access. The vacant access lots will improve accessibility and effective removal action implementation and reduce the amount of construction activity on streets.

Soil excavation will be performed to include the following limits:

- Soil excavation will include the use of conventional mechanical, vacuum excavation, and/or manual means and methods depending on access restrictions.
- Standard practices will be employed to protect existing conditions and the health and safety of both employees involved in the removal action and the community.
- Excavation is limited to exposed soil areas. No structures, asphalt, pavement, etc. will be removed.
- Excavation is limited to one (1) foot offset from structures, and sidewalks – in certain cases where foundation footings are wider or some other structural interference is encountered, the offset may have to be increased an additional 1-2 feet.
- Fences will be offset by approximately 6 inches more or less in order to avoid damage to the fence or interference with the adjacent property.
- Excavation parallel or adjacent to structures will maintain a nominal 45-degree (1:1) slope from grade to specified depth of excavation.
- Excavation will be limited to one (1) foot away (more or less) from property lines
- Depth of excavation within the drip line of designated trees will be limited to 6 inches or less depending on the degree of root interference and/or potential damage to the tree.
- Select areas will not be excavated based on property owner special request.
- Above ground structures such as swimming pools, storage sheds, and gazebos will not be relocated or moved. Excavation activities will occur around such elements.

Excavation depths will vary depending on prior sampling results ranging from one to three feet bgs. Excavated material will not be placed next to an excavation or stockpiled overnight on public driveways, streets, sidewalks, or any concrete or asphalt surfaces.

Water or other suppression means will be used to control dust and airborne dirt. Continuous dust monitoring and periodic air sampling for analysis of PAHs will be conducted around the perimeter of the area being disturbed.

Any refuse, rubbish, and/or other discarded material including loose or broken concrete that is discovered during excavation will be removed with the soil and disposed of accordingly. In general, buried concrete structures will not be disturbed and would remain in place. However, decisions will be made on a site-specific basis.

2.4.2 Transportation and Disposal

Excavated material will only be staged for disposal and stockpiled at pre-approved, fenced, and secured staging areas. Non-soil features that may require removal and disposal will be segregated from soil for management off-site as construction debris or yard waste as applicable. Excavated soil will be removed from the properties for disposal via roll-off boxes or equivalent industry standard means. Transportation of the excavated material will be completed by a transporter licensed for commercial transportation, and each truckload will be covered with a fully functioning tarp system. Provisions for removal of soil from equipment and daily street/alley cleaning will be developed to minimize soil tracking and maintain a clean work area.

Waste characterization sampling has been conducted in advance of soil excavation to support establishment of waste profiles with an approved offsite non-hazardous disposal facility. Non-soil features that qualify as construction debris or yard waste will be managed separately. More detailed information on the transportation and disposal of the excavated material is provided in the T&DP (Appendix D).

2.4.3 Backfilling/Compaction

Imported subsoil and topsoil fill material has been sampled prior to initiating field work. A minimum of one sample per fill source and a maximum of one sample per 1,000 cubic yards of subsoil and topsoil material will be collected for analysis to confirm fill material meets the Tier 1 Residential Screening Criteria for Illinois EPA Tiered Approach to Corrective Action Objectives (TACO) including the background assessment for PAHs. In addition, topsoil will meet established guidelines for quality including mineral content.

The fill material will be analyzed for Semi-Volatile Organic Compounds (SVOCs), Volatile Organic Compounds (VOCs), and Metals using the USEPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Methods 8270C, 8260, and 6010, respectively. For the following specific BAPEQ constituents, concentration in soil will meet the criteria of 2.0 milligrams per kilogram (mg/kg) or less: benzo(a)anthracene, benzo(a)pyrene, benzo(b) fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Imported soils utilized for this project are described in two classifications and are as follows:

1. Sub-soil (-8 inches to -3 feet): "Clean Fill" with CL or ML (Illinois Department of Transportation (IDOT)) Classification
2. Topsoil (-8 to surface): Standard Topsoil Mix (IDOT) Classification

Subsoil fill material will be placed at various depths, where applicable, up to the depth of topsoil. Subsoil will be compacted with a hand-operated compactor to 90 percent maximum dry density as determined by ASTM D698 in no greater than 6-inch lifts. The backfilled areas will be compacted in a manner that prevents differential settlement, sink holes, subsidence, etc.

Subsoil and topsoil fill material will be imported to the excavated areas by both mechanical and manual methods. The use of mechanical methods will vary depending on the accessibility to the residential property. Properties that cannot be accessed by mechanical means will have subsoil and topsoil materials delivered to the property via a conveyor system. Backfill materials

that are moved by the conveyor will be spread into the excavation using manual methods including wheel barrels, buggies, shovels, rakes, and hoes.

Influence areas adjacent to or beneath structures, sidewalks, pavement, curbs, piping, and other facilities will be backfilled with specified material such as 2,000 pound per square inch (psi) concrete, granular fill, or sand. The fill will be placed in lifts of 6-inch maximum thickness and each lift will be compacted to a minimum of 95 percent relative compaction as determined in accordance with ASTM D1157. The compaction level will be verified by a geotechnical subcontractor.

2.4.4 Restoration

Those portions of individual residential properties impacted by the removal action will be restored to a condition similar to that existing immediately prior to the removal action. This may include any of the following landscaping types: turf and grasses, plants, trees, and shrubs. Fences or other property features removed to facilitate removal action will be replaced. Landscaping and restoration activities at each property will be site-specific and dependent on pre-existing conditions documented by the pre-construction survey checklist, and/or the pre-construction video and photographs.

Replacement shrubs and trees will be the same or substantially similar species and quality of that removed where possible, except existing trees larger than 3-inch caliper will be replaced with 2-inch caliper trees. In planting beds and gardens, a 12-inch depth of topsoil will be placed. For flowers and perennials that will be removed, a cost basis will be developed for reimbursement of the value.

2.4.5 Contingencies

Contingencies have been put into place for the repair or replacement of items that may become damaged during the removal action.

1. Special landscaping features such as active underground sprinkler systems, electrical, piping, plumbing, and drain tile found within the limits of the excavation will be removed and replaced. Any damage incurred to any of the above items will be repaired.

2. Concrete sidewalks and asphalt areas damaged as a result of the removal action will be repaired using sand, gravel, 2,000 pound per square inch (psi) slurry concrete and 3,500 psi concrete.

3. Older fences that are removed from properties and are not reusable will be replaced with new fences.

4. Pet burial areas will be addressed on a site-specific basis in consultation with property owners.

5. Buried tanks, drums, spilled oil, cleaning chemicals, or other controlled contaminants unrelated to PAH impacts being addressed by the removal action will be addressed on a case-by-case basis. The first alternative will be to terminate the excavation, identify, mark off, and document the boundary conditions. Upon review/approval, the excavation will continue beyond the limits of the conditions or as determined acceptable action. Honeywell is not responsible for the above-mentioned items.

Any unforeseen conditions encountered during excavation (e.g. dumping areas, etc.) will be address on a site-specific basis.

2.5 Post-Construction Review

A post-construction meeting will be held with each property owner following the completion of the restoration and/or landscape maintenance period (discussed in Section 3.2) depending on the time frame. During this meeting, the completed work will be reviewed and a punch list of action items will be developed as necessary. During the meeting, a copy of the edited survey notes and construction drawings will be reviewed to confirm the information gathered during the pre-construction survey meeting has been satisfied. Photographs and video of the restored work will be obtained during the meeting. A post-construction checklist will be developed prior to removal action implementation.

An additional post-construction meeting will be held if necessary following the landscape maintenance period or upon completion of any punch list items that were identified during the initial post-construction meeting. After this step, project closeout will be initiated as described in the following section.

SECTION 3

Project Completion

3.1 Demobilization

After the completion of all removal activities and all punch list items, all field equipment, temporary facilities, and all other items brought on-site during removal action implementation will be removed. All wastes and general construction debris generated by the removal action activities will be properly managed of off-site. Street, sidewalks and common areas utilized during the work will be cleaned/restored.

3.2 Landscaping Maintenance

Landscaping maintenance will be provided to the individual properties on an as needed basis. Landscaping maintenance may include, as needed:

- re-sodding areas impacted by the removal action that do not provide satisfactory growth by July 1st of the following year, provided that there is not an alternative cause for the unsatisfactory growth;
- replacement of unhealthy plants, trees, or shrubs for up to 1-year after completion of the property, provided that there is not an alternative cause for the unhealthy plants, trees, or shrubs;
- watering, pruning, and cultivating to promote healthy growth of plantings;
- temporary protection fences, barriers, and signs to protect plantings;
- restoring or replacing damaged wrappings on plantings

The Subcontractor will provide watering services for turf and grasses, plants, trees, and shrubs planted during restoration at the properties. Watering services will be provided based on the following conditions:

1. Vegetation planted between September 1 and May 30, water will be applied every 5 days for a total of 7 additional watering events (after initial watering).
2. Vegetation planted between June 1 and August 31, water will be applied every 3 days for a total of 15 additional watering events, or as needed.
3. During periods of rain, watering will be postponed for 3 days. During periods of inadequate rainfall, supplemental watering may be provided after the initial and additional watering events and prior to the acceptance of work completion by the property owners.

3.3 Property-Specific Documentation

Once the work has been completed, Honeywell will attempt to obtain signatures of property owners as documentation. Property owners will receive a copy of the signed document and a letter from USEPA indicating completed removal action at their property.

SECTION 4

Residential Removal Action Completion Report

Following removal action completion, a Residential Removal Action Completion Report will be prepared and submitted to USEPA. A proposed outline of the Residential Removal Action Completion Report is presented below.

Residential Removal Action Completion Report Outline

Executive Summary

1. Introduction
   - 1.1 Purpose of Report
   - 1.2 Site Background
     - 1.2.1 Site Description
     - 1.2.2 Main Site History
     - 1.2.3 Residential Site History
     - 1.2.4 Previous Investigations
   - 1.3 Report Organization

2. Summary of Residential Removal Action
   - 2.1 Excavation
   - 2.2 Backfill and Restoration
   - 2.3 Scope Variances

3. Residential Removal Action Documentation
   - 3.1 Certification of Clean Backfill Material
   - 3.2 Pre and Post Construction Survey Documentation
   - 3.3 Waste Disposal Documentation

4. Conclusions and Recommendations

5. References

SECTION 5

Project Schedule

Figure 5-1 presents the proposed project schedule for implementation of the residential removal action. Critical assumptions influencing this schedule include:

- The Work Plan is approved by the USEPA.
- Limited access or logistical restrictions arise while working within the residential area in a sequential fashion.
- No significant weather delays occur within the critical implementation phases.
- Unexpected conditions are not encountered.
- Additional properties can be incorporated into the schedule in an efficient fashion as needed.

SECTION 6

References

CH2M HILL. *Final Residential Soil Sampling Report for the Residential Study Area Near the Former Celotex Site, 2800 South Sacramento Avenue, Chicago, Illinois.* December 2006.

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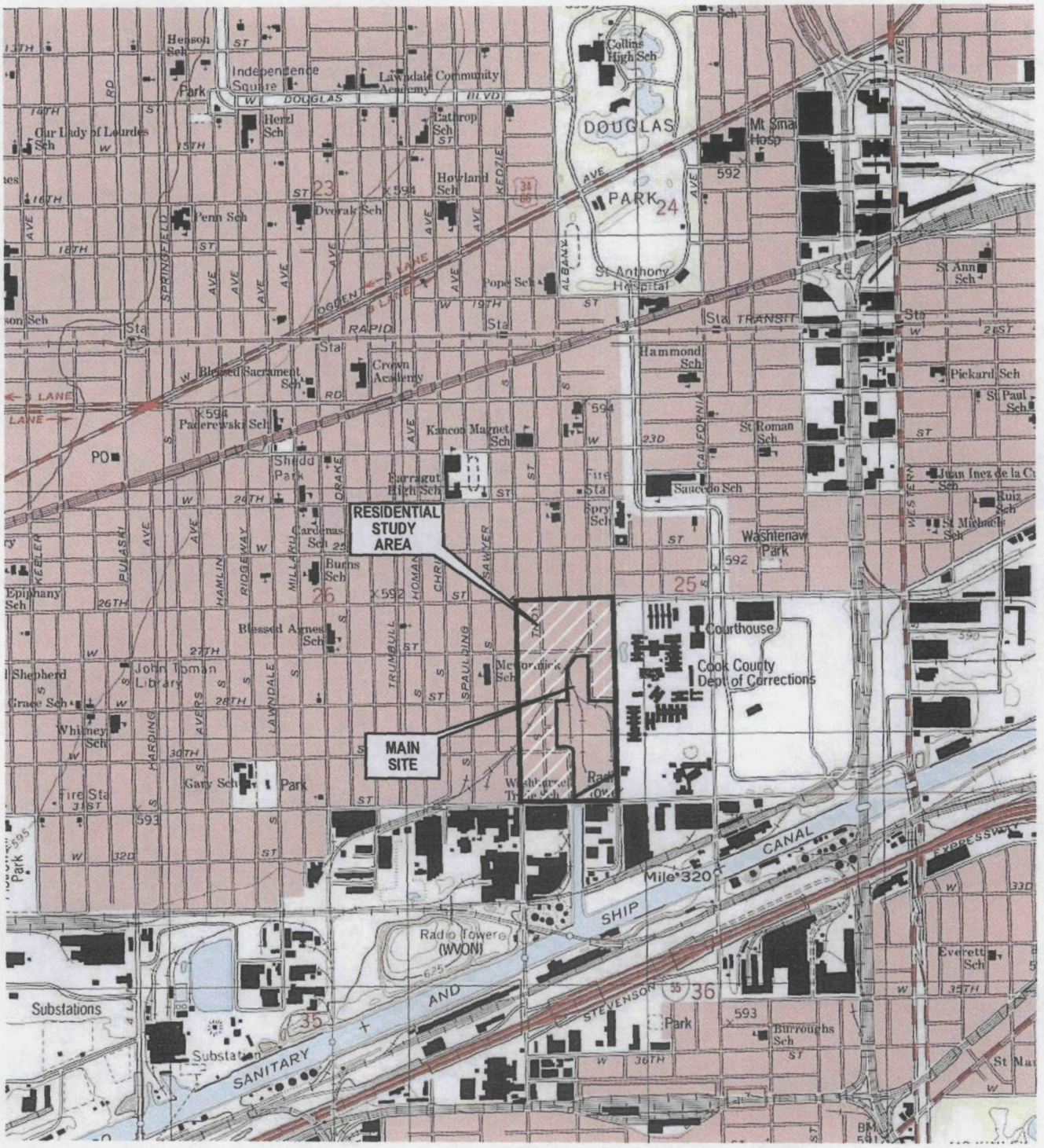
USEPA. 2005. Enforcement Action Memorandum, Request for a Non-Time-Critical Removal Action at the 2800 South Sacramento Avenue Site, Chicago, Illinois dated March 7, 2005.

Figures

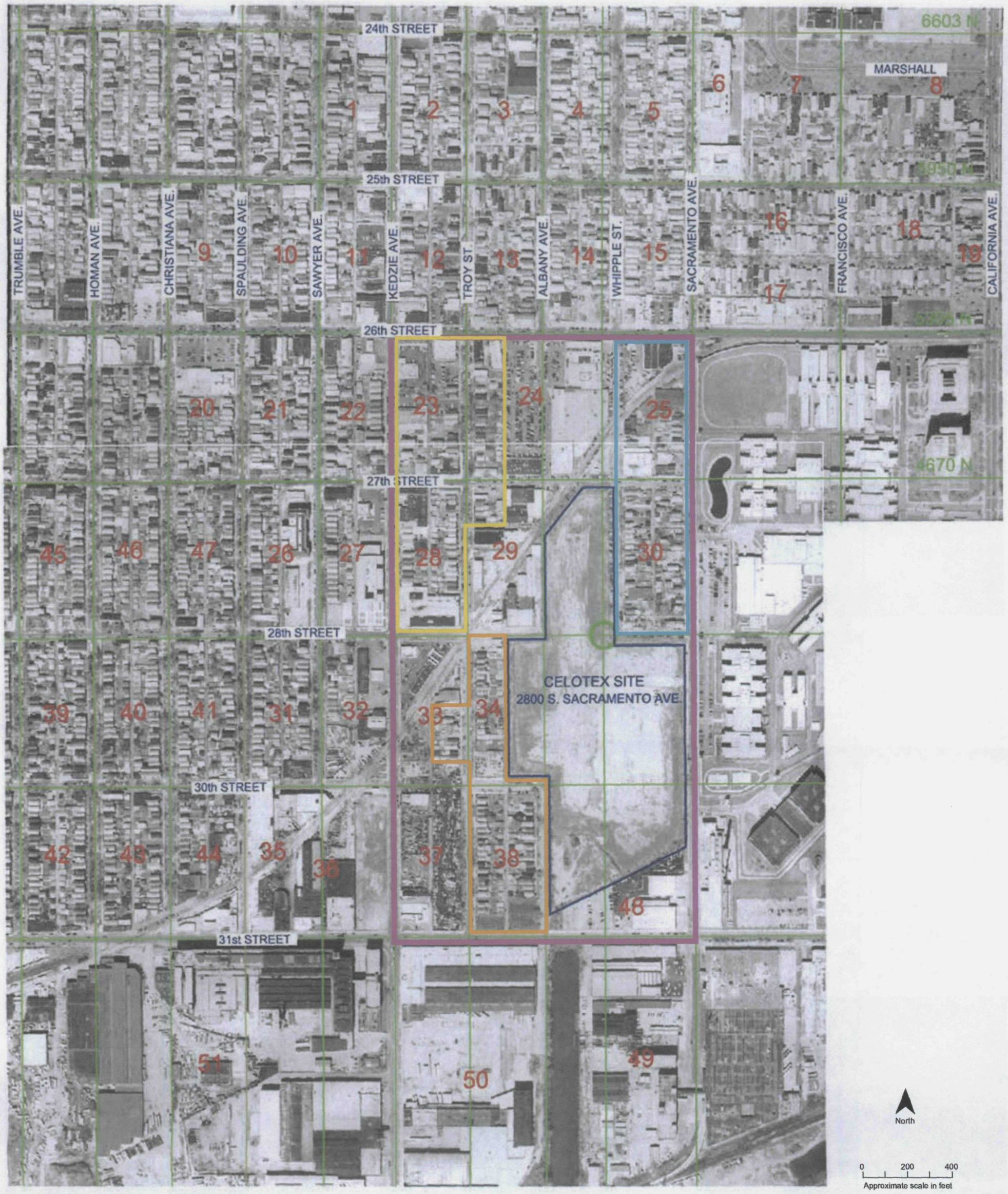
Figures



NOTE: Soil sampling within the Northeast and Southwest Residential Areas is required by USEPA. Honeywell has voluntarily agreed to perform residential soil sampling within the larger area identified as the Residential Study Area.

Source: U.S.G.S. 7.5-Minute Quadrangle for Englewood, Illinois, 1997

Figure 1-1
Site Location Map
Residential Study Area
Near Former Celotex Site–Chicago, Illinois



LEGEND

27	Block Number
	Northing and Easting Lines
	Main Site
	Northeast Residential Area
	Southwest Residential Area
	Northwest Residential Area
	Residential Sampling Area

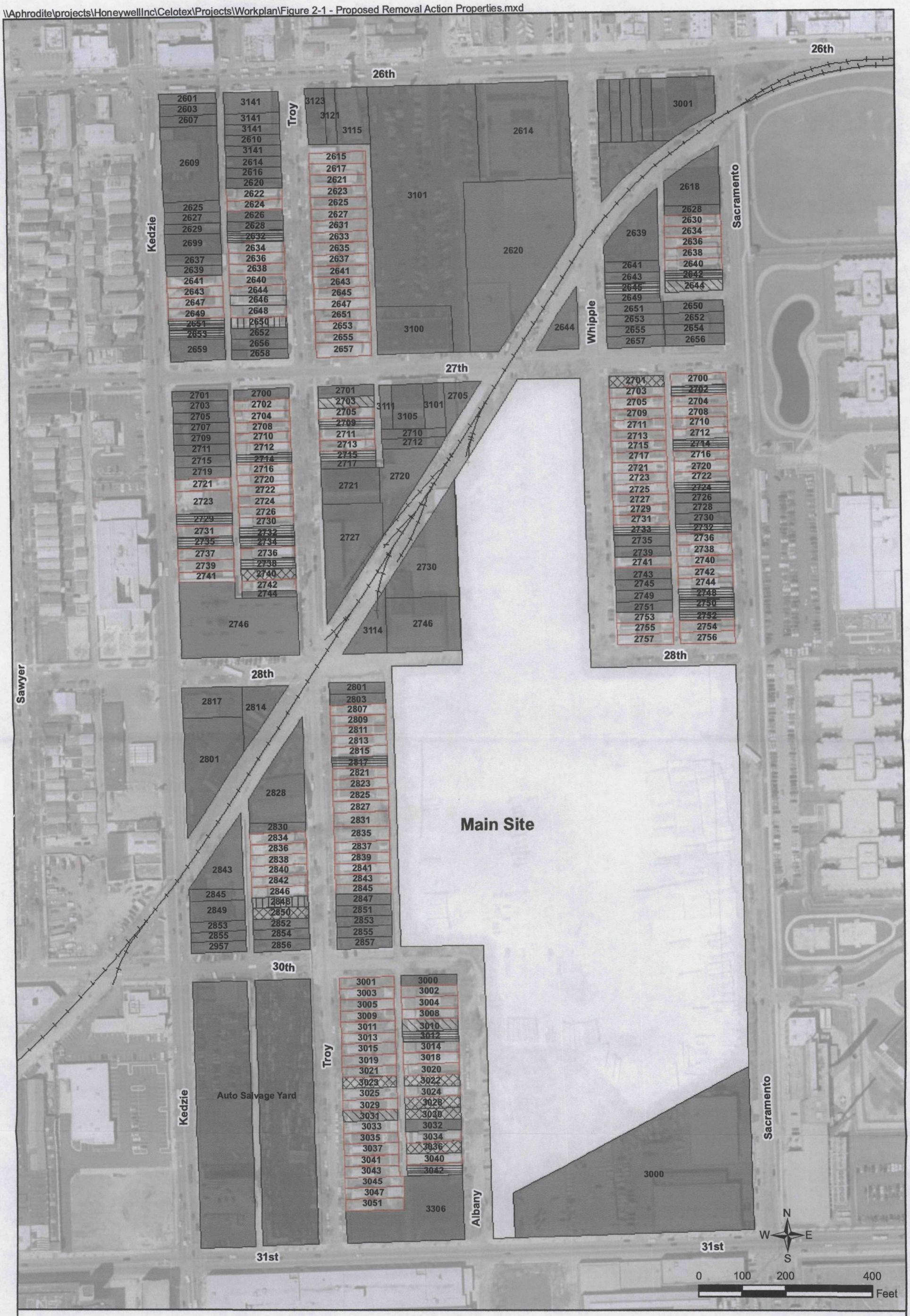
NOTE: Soil sampling within the Northeast and Southwest Residential Areas is required by USEPA. Honeywell has voluntarily agreed to perform residential soil sampling within the larger area identified as the Residential Study Area.

Figure 1-2

Aerial Photograph of Residential Area Residential Removal Action Area

Near Former Celotex Site–Chicago, Illinois

\\Aphrodite\projects\HoneywellInc\Celotex\Projects\Workplan\Figure 2-1 - Proposed Removal Action Properties.mxd



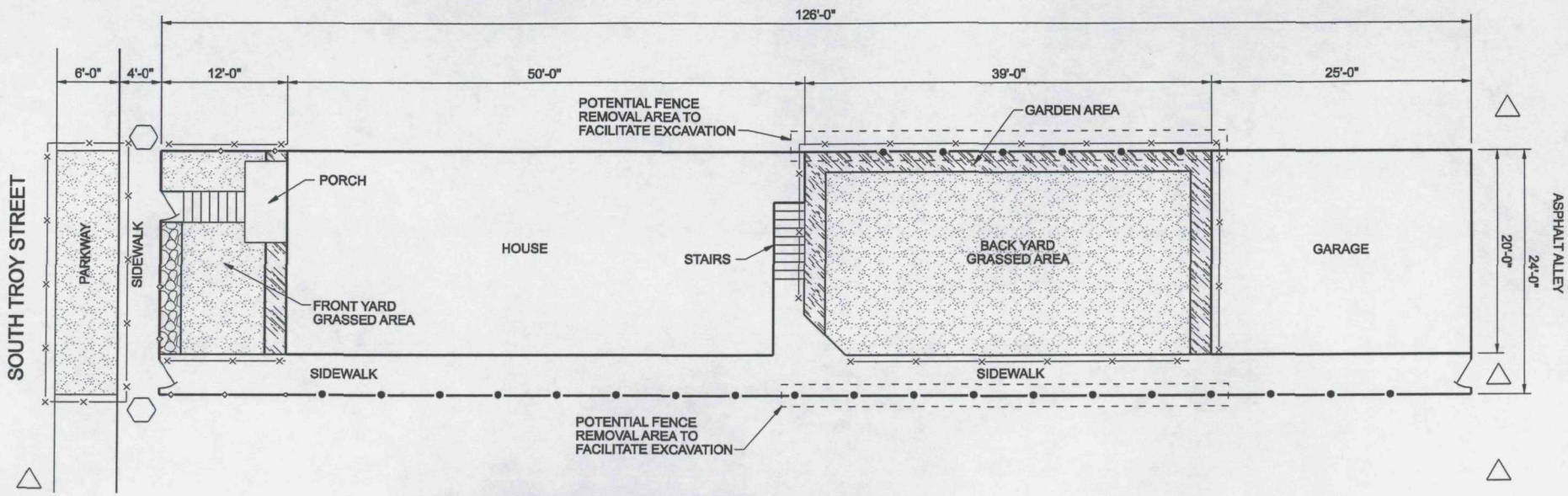
Legend

- Industrial or Commercial Property
- Property with no exposed soil
- Property owner declined access
- Proposed Removal Action Property
- No response from owner/tenants*
- Not able to arrange access for sampling*
- Property with BAPEQ concentrations below 2 ppm

* Properties that may qualify for removal action if access can be obtained in 2007

Figure 2-1
Proposed Removal Action Properties
Residential Removal Action Work Plan
Near Former Celotex Site - Chicago, Illinois

CH2MHILL



TYPICAL EXCAVATION DETAIL NOTES:

1. DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATION OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
2. EXCAVATION IS LIMITED TO (1) FOOT OFFSET FROM STRUCTURES, AND SIDEWALKS - IN CERTAIN CASES WHERE FOUNDATION FOOTING ARE WIDER OR SOME OTHER STRUCTURAL INTERFERENCE IS ENCOUNTERED, THE OFFSET MAY HAVE TO BE INCREASED AN ADDITIONAL 1-2 FEET.
3. EXCAVATION PARALLEL OR ADJACENT TO STRUCTURES WILL MAINTAIN A NOMINAL 45-DEGREE (1:1) SLOPE FROM GRADE TO SPECIFIED DEPTH OF EXCAVATION.
4. EXCAVATION WILL BE LIMITED TO ONE (1) FOOT AWAY (MORE OR LESS) FROM PROPERTY LINES.
5. DEPTH OF EXCAVATION WITHIN THE DRIP LINE OF DESIGNATED TREES WILL BE LIMITED TO 6 INCHES OR LESS DEPENDING ON THE DEGREE OF ROOT INTERFERENCE AND/OR POTENTIAL DAMAGE TO THE TREE.
6. FENCES WILL BE OFFSET BY APPROXIMATELY 6 INCHES MORE OR LESS IN ORDER TO AVOID DAMAGE TO THE FENCE OR INTERFERENCE WITH THE ADJACENT PROPERTY.
7. ABOVE GROUND STRUCTURES SUCH AS SWIMMING POOLS, STORAGE SHEDS, AND GAZEBOS WILL NOT BE RELOCATED OR MOVED. EXCAVATION ACTIVITIES WILL OCCUR AROUND SUCH ELEMENTS.
8. SOIL EXCAVATION WILL INCLUDE THE USE OF MECHANICAL AND/OR MANUAL MEANS AND METHODS DEPENDING ON ACCESS RESTRICTIONS.
9. EXCAVATION IS LIMITED TO EXPOSED SOIL AREAS. NO STRUCTURES, ASPHALT, PAVEMENT, ETC. WILL BE REMOVED.

LEGEND:

- GRASSED AREAS (AREA FOR POTENTIAL EXCAVATION)
- GARDEN AREAS (AREA FOR POTENTIAL EXCAVATION)
- DECORATIVE ROCK AREAS (AREA FOR POTENTIAL EXCAVATION)
- GATE
- WOOD FENCE
- CHAIN-LINK FENCE
- ORANGE PLASTIC CONSTRUCTION BARRIER FENCE
- HIGH-LEVEL WARNING FLAGS
- SIDEWALK CLOSED SIGN

N

NORTH

0 7.5' 15'

SCALE IN FEET

DRAWING NOTES:

1. SIDEWALK AND PARKWAY WIDTH IS ESTIMATED.
2. PROPERTY DIMENSIONS ARE APPROXIMATE.

Figure 2-2
Conceptual Residential Excavation Plan

Residential Removal Action Work Plan

Near Former Celotex Site - Chicago, Illinois

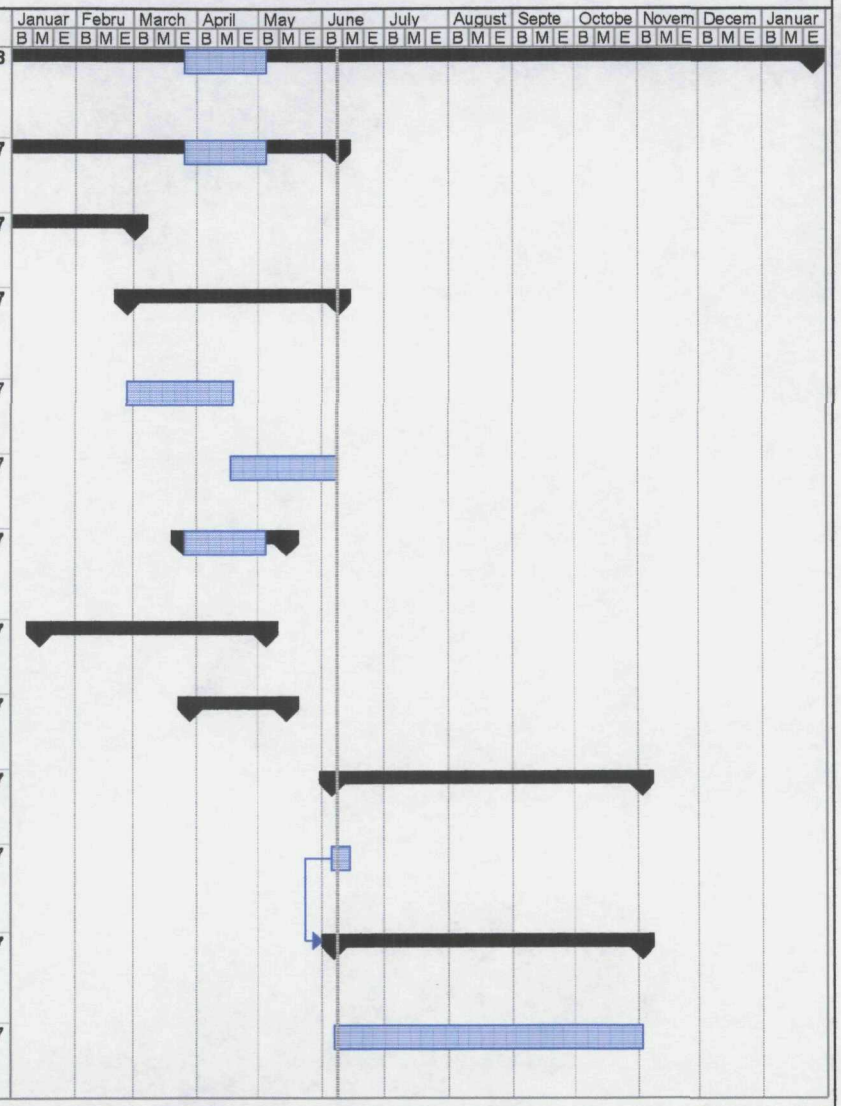
CH2MHILL

327757.H2

ra05c3037t_327757.dgn

Figure 5-1
Proposed Residential Removal Action Schedule
Residential Removal Action Work Plan
Near Former Celotex Site - Chicago, Illinois

ID	Task Name	Duration	Start	Finish
1	**Honeywell Celotex Project - Chicago, IL**	**286 days**	**Mon 12/18/06**	**Fri 1/25/08**
2	**Planning and Preparation**	**122 days**	**Mon 12/18/06**	**Fri 6/8/07**
3	**Specification and Procurement Plan Development**	**52 days**	**Mon 12/18/06**	**Thu 3/1/07**
14	**Removal Action Work Plan**	**74 days**	**Mon 2/26/07**	**Fri 6/8/07**
15	Draft Work Plan to EPA	38 days	Mon 2/26/07	Wed 4/18/07
16	Final Work Plan Approval	37 days	Wed 4/18/07	Fri 6/8/07
17	**Conduct Preconstruction Property Surveys**	**36 days**	**Mon 3/26/07**	**Mon 5/14/07**
21	**Permitting and Notification Process**	**80 days**	**Mon 1/15/07**	**Fri 5/4/07**
27	**Subcontractor Procurement**	**33 days**	**Thu 3/29/07**	**Mon 5/14/07**
38	**Removal Action Implementation**	**107 days**	**Wed 6/6/07**	**Fri 11/2/07**
39	Contractor Mobilization & Set up Temporary Project Facilities	7 days	Wed 6/6/07	Thu 6/14/07
40	**Removal Action Activities - 140 Residential Properties**	**106 days**	**Thu 6/7/07**	**Fri 11/2/07**
41	Schedule and Conduct Preconstruction Meetings	106 days	Thu 6/7/07	Fri 11/2/07

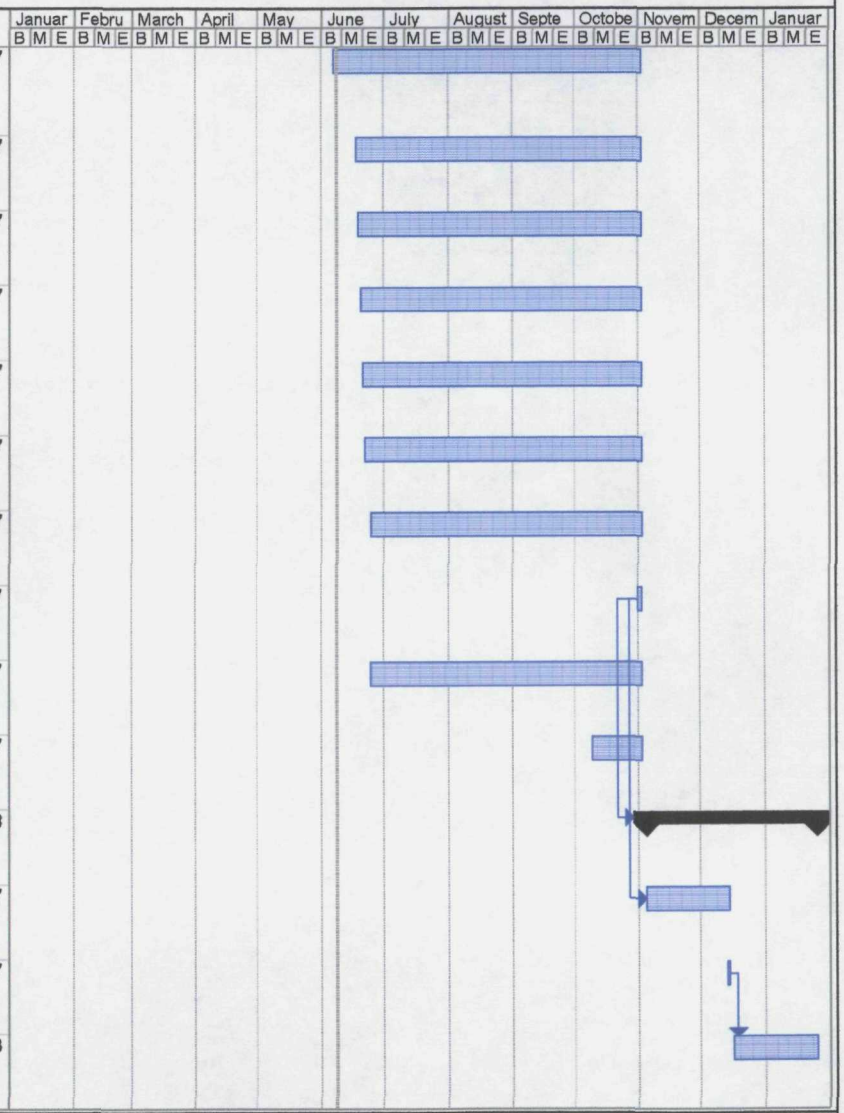


Project: Figure 5-1_Schedule_060807_FINAL.
Date: Fri 6/8/07

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

Figure 5-1
Proposed Residential Removal Action Schedule
Residential Removal Action Work Plan
Near Former Celotex Site - Chicago, Illinois

ID	Task Name	Duration	Start	Finish
42	Survey Controls/Stake Excavation(s), Utility Clearance	106 days	Thu 6/7/07	Fri 11/2/07
43	Site Clearing	99 days	Mon 6/18/07	Fri 11/2/07
44	Site Excavation	98 days	Tue 6/19/07	Fri 11/2/07
45	Survey - Fill & Backfill	97 days	Wed 6/20/07	Fri 11/2/07
46	Plant Trees and Shrubs	96 days	Thu 6/21/07	Fri 11/2/07
47	Final Topsoil, ground cover & sod	95 days	Fri 6/22/07	Fri 11/2/07
48	Residential Post Construction Meetings	94 days	Mon 6/25/07	Fri 11/2/07
49	Demobilization	2 days	Thu 11/1/07	Fri 11/2/07
50	Maintenance of Trees, Plants, Shrubs, and Sod	94 days	Mon 6/25/07	Fri 11/2/07
51	Distribution of successful remediation documentation	18 days	Wed 10/10/07	Fri 11/2/07
52	**Completion Report & Closeout**	**60 days**	**Mon 11/5/07**	**Fri 1/25/08**
53	Develop Draft Report	30 days	Mon 11/5/07	Fri 12/14/07
54	Submit to Draft Report USEPA	1 day	Fri 12/14/07	Fri 12/14/07
55	Obtain USEPA Approval	30 days	Mon 12/17/07	Fri 1/25/08



Project: Figure 5-1_Schedule_060807_FINAL.
Date: Fri 6/8/07

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

Tables

Tables

TABLE 2-1
Proposed Removal Action Properties
Residential Removal Action Work Plan
Former Celotex Site - Chicago, Illinois

Area	Block Number	Property Address	Property Status [1]	Planned Excavation Areas[2]				
				Parkway	Front Yard	Front Yard/Parkway Excavation Depth (ft)[3]	Back Yard	Back Yard Excavation Depth (ft)[3]
NE	2600	2630 South Sacramento Avenue	Planned Excavation	Yes	No	NA	Yes	3
NE	2600	2634 South Sacramento Avenue	Planned Excavation	Yes	No	NA	Yes	1
NE	2600	2636 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	2
NE	2600	2638 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	1
NE	2600	2640 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	2
NE	2600	2642 South Sacramento Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2600	2644 South Sacramento Avenue	Property Owner Declined Access	NA	NA	NA	NA	NA
NE	2700	2700 South Sacramento Avenue	Planned Excavation	Yes	No	NA	Yes	3
NE	2700	2702 South Sacramento Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2700	2704 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	No	NA
NE	2700	2708 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	No	NA
NE	2700	2710 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2712 South Sacramento Avenue	Planned Excavation	Yes	Yes	3	Yes	2
NE	2700	2714 South Sacramento Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2700	2716 South Sacramento Avenue	Planned Excavation	Yes	No	NA	Yes	2
NE	2700	2720 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	3
NE	2700	2722 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	No	NA
NE	2700	2724 South Sacramento Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2700	2732 South Sacramento Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2700	2736 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2738 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	No	NA
NE	2700	2740 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	1
NE	2700	2742 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2744 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2748 South Sacramento Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2700	2750 South Sacramento Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2700	2752 South Sacramento Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2700	2754 South Sacramento Avenue	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2756 South Sacramento Avenue	Planned Excavation	Yes	No	NA	Yes	2
NE	2600	2645 South Whipple Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2700	2701 South Whipple Street	Property with no exposed soil	NA	NA	NA	NA	NA
NE	2700	2703 South Whipple Street	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2705 South Whipple Street	Planned Excavation	Yes	No	NA	Yes	2
NE	2700	2709 South Whipple Street	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2711 South Whipple Street	Planned Excavation	Yes	Yes	3	Yes	2

TABLE 2-1
Proposed Removal Action Properties
Residential Removal Action Work Plan
Former Celotex Site - Chicago, Illinois

Area	Block Number	Property Address	Property Status [1]	Planned Excavation Areas[2]				
				Parkway	Front Yard	Front Yard/Parkway Excavation Depth (ft)[3]	Back Yard	Back Yard Excavation Depth (ft)[3]
NE	2700	2713 South Whipple Street	Planned Excavation	Yes	No	NA	Yes	2
NE	2700	2715 South Whipple Street	Planned Excavation	Yes	Yes	3	Yes	2
NE	2700	2717 South Whipple Street	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2721 South Whipple Street	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2723 South Whipple Street	Planned Excavation	Yes	Yes	1	Yes	2
NE	2700	2725 South Whipple Street	Planned Excavation	Yes	Yes	3	No	NA
NE	2700	2727 South Whipple Street	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2729 South Whipple Street	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2731 South Whipple Street	Planned Excavation	Yes	Yes	1	Yes	1
NE	2700	2733 South Whipple Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
NE	2700	2741 South Whipple Street	Planned Excavation	Yes	Yes	2	Yes	2
NE	2700	2753 South Whipple Street	Planned Excavation	Yes	Yes	2	Yes	3
NE	2700	2755 South Whipple Street	Planned Excavation	Yes	No	NA	Yes	2
NE	2700	2757 South Whipple Street	Planned Excavation	Yes	No	NA	Yes	2
SW	2800	2834 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
SW	2800	2836 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	2800	2838 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	2800	2840 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	2800	2842 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	2
SW	2800	2846 South Troy Street	Planned Excavation	Yes	Yes	2	No	NA
SW	2800	2848 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
SW	2800	2850 South Troy Street	Property with no exposed soil	NA	NA	NA	NA	NA
SW	2800	2807 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	3
SW	2800	2809 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	3
SW	2800	2811 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	3
SW	2800	2813 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	3
SW	2800	2815 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1
SW	2800	2817 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
SW	2800	2821 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	2800	2823 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	2800	2825 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1
SW	2800	2827 South Troy Street	Planned Excavation	Yes	Yes	3	Yes	3
SW	2800	2831 South Troy Street	Planned Excavation	Yes	Yes	3	Yes	3
SW	2800	2835 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	2800	2837 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2

TABLE 2-1
Proposed Removal Action Properties
Residential Removal Action Work Plan
Former Celotex Site - Chicago, Illinois

Area	Block Number	Property Address	Property Status [1]	Planned Excavation Areas[2]				
				Parkway	Front Yard	Front Yard/Parkway Excavation Depth (ft)[3]	Back Yard	Back Yard Excavation Depth (ft)[3]
SW	2800	2839 South Troy Street	Planned Excavation	Yes	Yes	3	Yes	2
SW	2800	2841 South Troy Street	Planned Excavation	Yes	Yes	2	No	NA
SW	2800	2843 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1
SW	2800	2845 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3002 South Albany Avenue	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3004 South Albany Avenue	Planned Excavation	Yes	Yes	3	Yes	2
SW	3000	3008 South Albany Avenue	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3010 South Albany Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
SW	3000	3012 South Albany Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
SW	3000	3014 South Albany Avenue	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3018 South Albany Avenue	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3020 South Albany Avenue	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3022 South Albany Avenue	Property with no exposed soil	Yes	No	NA	No	NA
SW	3000	3024 South Albany Avenue	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3028 South Albany Avenue	Property with no exposed soil	NA	NA	NA	NA	NA
SW	3000	3030 South Albany Avenue	Property with no exposed soil	NA	NA	NA	NA	NA
SW	3000	3034 South Albany Avenue	Planned Excavation	Yes	Yes	2	Yes	1
SW	3000	3036 South Albany Avenue	Property with no exposed soil	NA	NA	NA	NA	NA
SW	3000	3040 South Albany Avenue	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3042 South Albany Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
SW	3000	3001 South Troy Street	Planned Excavation	Yes	Yes	3	Yes	3
SW	3000	3003 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3005 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3009 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3011 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3013 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3015 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3019 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	2
SW	3000	3021 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1
SW	3000	3023 South Troy Street	Property with no exposed soil	NA	NA	NA	NA	NA
SW	3000	3025 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3029 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3031 South Troy Street	Property Owner Declined Access	NA	NA	NA	NA	NA
SW	3000	3033 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	2
SW	3000	3035 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1

TABLE 2-1
Proposed Removal Action Properties
Residential Removal Action Work Plan
Former Celotex Site - Chicago, Illinois

Area	Block Number	Property Address	Property Status [1]	Planned Excavation Areas[2]				
				Parkway	Front Yard	Front Yard/Parkway Excavation Depth (ft)[3]	Back Yard	Back Yard Excavation Depth (ft)[3]
SW	3000	3037 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
SW	3000	3041 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3043 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
SW	3000	3045 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3047 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
SW	3000	3051 South Troy Street	Planned Excavation	Yes	No	NA	Yes	2
NW	2600	2622 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2600	2624 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2600	2632 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2600	2634 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2600	2636 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2600	2638 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2600	2640 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1
NW	2600	2644 South Troy Street	Planned Excavation	Yes	Yes	1	No	NA
NW	2600	2646 South Troy Street	BAPEQ Results are below 2 ppm	NA	NA	NA	NA	NA
NW	2600	2648 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1
NW	2600	2650 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2600	2641 South Kedzie Avenue	Planned Excavation	Yes	Yes	3	Yes	3
NW	2600	2643 South Kedzie Avenue	Planned Excavation	Yes	Yes	3	Yes	3
NW	2600	2647 South Kedzie Avenue	Planned Excavation	Yes	Yes	2	No	NA
NW	2600	2649 South Kedzie Avenue	Planned Excavation	Yes	Yes	2	Yes	2
NW	2600	2651 South Kedzie Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2600	2653 South Kedzie Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2600	2615 South Troy Street	Planned Excavation	Yes	No	NA	Yes	2
NW	2600	2617 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2600	2621 South Troy Street	Planned Excavation	Yes	Yes	1	No	NA
NW	2600	2623 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2600	2625 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2600	2627 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2600	2631 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2600	2633 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2600	2635 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2600	2637 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2600	2641 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2600	2643 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1

TABLE 2-1

Proposed Removal Action Properties

Residential Removal Action Work Plan

Former Celotex Site - Chicago, Illinois

Area	Block Number	Property Address	Property Status [1]	Planned Excavation Areas[2]				
				Parkway	Front Yard	Front Yard/Parkway Excavation Depth (ft)[3]	Back Yard	Back Yard Excavation Depth (ft)[3]
NW	2600	2645 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1
NW	2600	2647 South Troy Street	Planned Excavation	Yes	Yes	1	No	NA
NW	2600	2651 South Troy Street	Planned Excavation	Yes	No	NA	No	NA
NW	2600	2653 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2600	2655 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2600	2657 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1
NW	2700	2702 South Troy Street	Planned Excavation	Yes	Yes	1	No	NA
NW	2700	2704 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2700	2708 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2700	2710 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2700	2712 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2700	2714 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2700	2716 South Troy Street	Planned Excavation	Yes	Yes	1	No	NA
NW	2700	2720 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2700	2722 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2700	2724 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2700	2726 South Troy Street	Planned Excavation	Yes	No	NA	Yes	2
NW	2700	2730 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2700	2732 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2700	2734 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2700	2736 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	2
NW	2700	2738 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2700	2740 South Troy Street	Property with no exposed soil	NA	NA	NA	NA	NA
NW	2700	2742 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	2
NW	2700	2721 South Kedzie Avenue	Planned Excavation	No	Yes	2	No	NA
NW	2700	2723 South Kedzie Avenue	Planned Excavation	No	Yes	1	No	NA
NW	2700	2729 South Kedzie Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2700	2731 South Kedzie Avenue	Planned Excavation	Yes	Yes	1	Yes	1
NW	2700	2735 South Kedzie Avenue	Access agreement not yet obtained	NA	NA	NA	NA	NA
NW	2700	2737 South Kedzie Avenue	Planned Excavation	Yes	Yes	1	Yes	1
NW	2700	2739 South Kedzie Avenue	Planned Excavation	Yes	Yes	2	Yes	2
NW	2700	2741 South Kedzie Avenue	Planned Excavation	Yes	Yes	2	Yes	1
NW	2700	2703 South Troy Street	Property Owner Declined Access	NA	NA	NA	NA	NA
NW	2700	2705 South Troy Street	Planned Excavation	Yes	Yes	1	Yes	1
NW	2700	2709 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA

TABLE 2-1
Proposed Removal Action Properties
Residential Removal Action Work Plan
Former Celotex Site - Chicago, Illinois

Area	Block Number	Property Address	Property Status [1]	Planned Excavation Areas[2]				
				Parkway	Front Yard	Front Yard/Parkway Excavation Depth (ft)[3]	Back Yard	Back Yard Excavation Depth (ft)[3]
NW	2700	2711 South Troy Street	Planned Excavation	Yes	No	NA	Yes	2
NW	2700	2713 South Troy Street	Planned Excavation	Yes	Yes	2	Yes	1
NW	2700	2715 South Troy Street	Access agreement not yet obtained	NA	NA	NA	NA	NA

Notes:

[1] Access agreement process continues to attempt to contact remaining residential property owners and secure access.
Access agreement status and planned excavation is based on the 2006 FINAL Residential Sampling Report.

[2] A "no" indicates that excavation in the identified area is not required because there is no exposed soil or the BAPEQ concentration was below 2 ppm.

[3] Excavation depth is based on sampling results contained in the 2006 FINAL Residential Sampling Report.

NA = Not Applicable

Appendix A

APPENDIX A

Pre- and Post-Construction Property Survey Documentation

Residential Survey Meeting Checklist – Draft for Discussion Purposes Only
Residential Study Area Near the Former Celotex Site 2800 South Sacramento Avenue
Chicago, Illinois 60623

Address_____ Property Owner Present_____
CH2M Hill Representative_____ Contractor Representative_____
Date of Meeting_____ Time of Meeting_____

1. Type Of Property ☐ Residential ☐ Vacant Lot ☐ Vacant Lot with Structures
2. Vacant Lot Structure Type_____
3. Is the property safe to enter? ☐ Yes ☐ No

Safety Concerns:_____

4. Occupied ☐ Yes ☐ No

Front Yard

5. Any front access obstructions? ☐ Yes ☐ No ☐ Gates ☐ Fence - Removable? (Y/N): _____
   ☐ Stairs (number)_____ ☐ Up ☐ Down ☐ Entrance Staircase ☐ Raised Planters ☐ Landscaping
   ☐ Sidewalk Center Gate Width____ Height_____ Inches ☐ Sidewalk Side Gate Width___ Height___ Inches
   ☐ Front Passage Gate Width_____ Height_____ Inches (measure at narrowest/lowest point)
   ☐ Front Passage between structures to backyard Width___ height_____ inches

Other/ Comments_____

6. Front Passage Obstructions ☐ Yes ☐ No ☐ Window AC Unit ☐ Ground AC Unit ☐ Water Spigot
   ☐ Hose reel ☐ Stairs (number)_ ☐ Up ☐ Down ☐ Utility Meters ☐ Building Entrance

Other/Comments:_____

7. Sidewalk Fence Type ☐ Wrought iron ☐ Chain Link ☐ Metal ☐ Wood ☐ Brick/Block

Other & Combinations/Comments:_____

8. # Sidewalk Fence Posts Including Corners:____ # Side Fence Posts:___
9. North Front Yard Fence Type ☐ Wrought iron ☐ Chain Link ☐ Metal ☐ Wood ☐ Brick/Block

Other & Combinations/Comments:_____

10. South Front Yard Fence Type ☐ Wrought iron ☐ Chain Link ☐ Metal ☐ Wood ☐ Brick/Block

Other & Combinations/Comments:_____

12 Fence Anchored to Property Building ☐ Yes ☐ No Fence Anchored to Adjacent Building ☐ Yes ☐ No

13 Visible Front Yard Utilities? ☐ Yes ☐ No ☐ Gas ☐ Water ☐ Electrical ☐ Other _____

14 Property boundary markers observed
   ☐ Fence ☐ Structure ☐ Survey marker ☐ Landscaping
   ☐ Ground covers ☐ Pavement ☐ Owner's knowledge

Other/Comments_____

15 Front Yard Paved areas ☐ Driveway ☐ Sidewalks ☐ Concrete Slabs ☐ Brick/concrete pavers

16. Front Yard Soil Area Dimensions (feet) and shape

Area 1 Width_____ Length_____ Location_____

Shape_____Ground Cover:_____

Area 2 Width_____ Length_____ Location_____

Shape_____Ground Cover:_____

Area 3 Width_____ Length_____ Location_____

Shape_____Ground Cover:_____

17. Previous Site Drawing Front Yard Comments _____

_____

_____

Back and Side Yard

18. Back and Side Yard Paved Areas ☐Driveway ☐Sidewalks ☐Concrete Slabs ☐Patio
☐Brick/concrete pavers ☐Yard level Vehicle Parking Area ☐Raised Vehicle Parking Area

Other Comments_____

19. Alley Access ☐Yes ☐No ☐Access through Garage Only ☐Double Garage Door Opens Alley to Backyard?

20. ☐Backyard Passage to Alley Gate Width_____Height_____Inches (measure at narrowest/lowest point)

21. ☐ Alley Gate #1 Width_____Height_____Inches ☐ Vehicle Gate ☐ Person Gate ☐Not present

22. ☐ Alley Gate #2 Width_____Height_____Inches ☐ Vehicle Gate ☐ Person Gate ☐Not present

23. ☐ Alley Gate #3 Width_____Height_____Inches ☐ Vehicle Gate ☐ Person Gate ☐Not present

Obstructions in passage/Comments:_____

_____

24. Any Backyard Obstructions Present?
☐Yes ☐No ☐Stairs(number)_____ ☐Fence ☐Planters ☐Raised Parking Area
☐Clothes Line Poles ☐Automobiles (mobile or immobile)

Other/Comments_____

25. Number Of Structures Present On Property ☐1 ☐2 ☐3 ☐4 ☐5

26. Structure Types ☐ Residential ☐Garage ☐Prefabricated storage shed ☐Dog House
☐Constructed storage shed ☐Storage Building
☐Other (describe)_____

_____

27. Alley Obstructions:_____

_____

28. Back Yard **North** Fence Type☐ Wrought iron ☐Chain Link ☐Metal ☐Wood ☐ Brick/Block

Other/Combinations/Comments:_____

29. Back Yard **South** Fence Type☐ Wrought iron ☐Chain Link ☐Metal ☐Wood ☐Brick/Block

Other/Combinations/Comments:_____

30. Back Yard **Alley** Fence Type☐ Wrought iron ☐Chain Link ☐Metal ☐Wood ☐Brick/Block

Other/Combinations/Comments:_____

31. Back Yard **Additional** Fence Type☐ Wrought iron ☐Chain Link ☐Metal☐Wood ☐Brick/Block

32. Other/Combinations/Comments:_____

33. Additional Fence Location and Description_____

_____

34. # Alley Fence Posts Including Corners # North Side Fence Posts # South Side Fence Posts

35. Fence Anchored to Property Building ☐Yes ☐No Fence Anchored to Adjacent Building ☐Yes ☐No

36. Visible (overhead) or marked utilities?

☐Yes (Note locations of utilities on site sketch) ☐No

37. Evidence of Underground or Marked Underground utilities (No overhead lines to electrified garage, visible conduit to underground lines)? ☐Yes (Note locations of utilities on site sketch) ☐No ☐ Backyard Utilities Located During Residential Sampling? Location _____

38. Back Yard Soil Area Dimensions (feet) and shape

Area 1 Width_____ Length_____ Location_____

Shape_____Ground Cover:_____

Area 2 Width_____ Length_____ Location_____

Shape_____Ground Cover:_____

Area 3 Width_____ Length_____ Location_____

Shape_____Ground Cover:_____

39. Does the Resident have any knowledge of any drainage problems on the property (i.e. ponding water during rain, surface water runoff on to property, etc.)?

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

40. Does the Resident have any knowledge of any buried items (i.e. USTs, sprinkler systems, storm water lines, wells, deceased pets, electric lines) on the property?

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

41. List of Trees/Plants Resident Does Not Want Removed from Yards and Protected During Construction

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

42. List of Items Resident Wants Removed from Yards and Disposed

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location____________________Description____

Location____________________Description____

Location____________________Description____

Location____________________Description____

Location____________________Description____

Location____________________Description____

Location____________________Description____

43. List of Items in Yard That Must Be Moved Prior to Construction

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location____________________Description____

Item Will Be Moved By ☐Resident ☐Contractor

Location_____Description_____

Item Will Be Moved By ☐Resident ☐Contractor

44. Previous Site Drawing back and Side Yard Comments _____

_____

_____

45. Describe special landscaping features, mulch, pavers, boarders, or other:

_____

_____

46. Description of pools, gazebos, sheds, flag poles or other:

_____

_____

47. Property Owner/Tenant Special Requests:

_____

_____

48. Does the owner want both the front and back yard excavated to the same depth as the deepest sample in either yard that exceeded the 2 ppm cleanup level: ☐Yes ☐No

Digital Photographs taken: Reference number & file path/name:

Digital Video Record Taken: Reference number & file path/name:

Photo Log

Address_____

Picture Number	Camera Photo Number	Description	Looking

Residential Survey Meeting Checklist – Draft for Discussion Purposes Only
Residential Study Area Near the Former Celotex Site 2800 South Sacramento Avenue
Chicago, Illinois 60623

Video Log and Property Damage Inventory

Address_____Date_____

ID#	Camera ID #	Counter Reading	Description of Feature or Damage Recorded	Direction
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Video Log and Property Damage Inventory

Address_____Date_____

ID#	Camera ID #	Counter Reading	Description of Feature or Damage Recorded	Direction
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

Residential Survey Meeting Checklist – Draft for Discussion Purposes Only
Residential Study Area Near the Former Celotex Site 2800 South Sacramento Avenue
Chicago, Illinois 60623

Video Log and Property Damage Inventory

Address_____Date_____

ID#	Camera ID #	Counter Reading	Description of Feature or Damage Recorded	Direction
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				

Attach Property Sketches Here

Property Owner Agreement - Residential Preconstruction Meeting – Draft for Discussion Purposes Only
Residential Study Area Near the Former Celotex Site 2800 South Sacramento Avenue
Chicago, Illinois 60623

Address_____

Date of Meeting_____ Time of Meeting_____

Residential Survey Notes Given to Owner? Owner Initials Confirming Receipt _____

Construction Drawings Given to Owner? Owner Initials Confirming Receipt _____

Estimated Date for Start of Construction_____Estimated Duration for Construction_____ Days

Two Points of Continuous Access Planned? ☐Yes ☐No

Description of Access During Construction_____

_____

Description of Planned Maintenance of Existing Security Fencing During Construction _____

_____

Restoration Activities Planned_____

_____

Contractor will excavate the following areas:

☐Front Yard - Depth___ft ☐Side Yard – Depth___ft ☐Other Area #1 – Depth___ft

☐Back Yard – Depth___ft ☐Entire yard Depth___ft ☐Other Area #2 – Depth___ft

Description of Other Areas_____

_____

List of Trees/Plants Resident Does Not Want Removed from Yards and Protected During Construction

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

List of Items Resident Wants the Following Items Removed from Yards and Disposed

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

List of Items That Must Be Moved Prior to Construction

Location_____Description_____

Item Will Be Moved By ☐Resident ☐Contractor

Location_____Description_____

Item Will Be Moved By ☐Resident ☐Contractor

Location_____Description_____

Item Will Be Moved By ☐Resident ☐Contractor

List of buried items identified on the property.

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

The following identified drainage problems on the property will be addressed during the property restoration.

Location_____Description_____

Location_____Description_____

Location_____Description_____

Location_____Description_____

Resident understands that grasses, plants, trees, shrubs, flowers and ornamental plants will be removed and replaced as described below:

1.

2.

3.

4.

5.

6.

7.

(Continued as necessary on additional pages)

Following restoration of the property the Contractor will maintain the new plants and sod as follows: Watering will be performed 15 times at 3 day intervals for a total of 45 days. The property owner will be required to mow the new grass, but no shorter than 2-inches during the maintenance period.

Property Owner Agreement Signatures:

Date	Contractor Signature	Print Name
Date	CH2M HILL Representative	Print Name
Date	Owner Signature	Print Name

CH2M HILL RECORD USE:

Preconstruction drawing(s) number, file name:

Digital photo record description, numbers taken:

Digital video record description & number, file name:

Property Owner - Post-Construction Meeting and Punch List– Draft for Discussion Purposes Only
Residential Study Area Near the Former Celotex Site 2800 South Sacramento Avenue
Chicago, Illinois 60623

Address_____

Date of Meeting_____ Time of Meeting_____

Property Owner Agreement Given to Owner? Owner Initials Confirming Receipt _____

Construction Drawings Given to Owner? Owner Initials Confirming Receipt _____

Date of Construction Start_____Date of Construction and Restoration Completion_____

Contractor Has Excavated and Restored the Following Areas:

☐Front Yard - Depth___ft ☐Side Yard – Depth__ft ☐Other Area #1 – Depth__ft

☐Back Yard – Depth__ft ☐Entire yard Depth___ft ☐Other Area #2 – Depth__ft

Description of Other Areas Remediated_____

Description of Any Property Upgrades or Improvements During Construction_____

_____

Any Damage to Trees/Plants Not Removed from Yards and Protected During Construction? ☐Yes ☐No

1. Location_____Description/Damage_____

Agreed To Resolution_____

2. Location_____Description/Damage_____

Agreed To Resolution_____

3. Location_____Description/Damage_____

Agreed To Resolution_____

4. Location_____Description/Damage_____

Agreed To Resolution_____

Any Items Resident Wanted Removed from Yards and Disposed Still Present? ☐Yes ☐No

1. Location_____Description_____

Agreed To Resolution_____

2. Location_____Description_____

Agreed To Resolution_____

3. Location_____Description_____

Agreed To Resolution_____

4. Location_____Description_____

Agreed To Resolution_____

Have All Items That Were Moved Prior to Construction Been Returned to the Proper Location? ☐Yes ☐No

1. Location_____Description_____

Agreed To Resolution_____

2. Location_____Description_____

Agreed To Resolution_____

3. Location_____Description_____

Agreed To Resolution_____

4. Location_____Description_____

Agreed To Resolution_____

Were Any Unknown Buried Items Uncovered On The Property During the Excavation? ☐Yes ☐No

1. Location_____Description_____

What Was Done:_____

2. Location_____Description_____

What Was Done:_____

3. Location_____Description_____

What Was Done:_____

Has The Owner/Resident Noticed Any New Drainage Problems? ☐Yes ☐No

1. Location_____Description_____

Agreed To Resolution_____

2. Location_____Description_____

3. Agreed To Resolution_____

Location_____Description_____

Agreed To Resolution_____

Have All Grasses, Trees, Shrubs, Flowers And Ornamental Plants Been Replaced As Promised?

☐Yes ☐No List Any Missing Plants:

1. Location_____Description_____

Agreed To Resolution_____

2. Location_____Description_____

Agreed To Resolution_____

3. Location_____Description_____

Agreed To Resolution_____

4. Location_____Description_____

Agreed To Resolution_____

5. Location_____Description_____

Agreed To Resolution_____

Has landscape watering started? ☐Yes ☐No

Does The Resident Report Any Damage To The Property Caused By The Construction? ☐**Yes** ☐**No**

List all damage, including any already repaired:

1. Location_____Description_____

Was the damage shown on the Preconstruction Photographs or Video? ☐Yes ☐No Address, Number or Location of Relevant Documentation: _____

Agreed To Resolution_____

2. Location_____Description_____

Was the damage shown on the Preconstruction Photographs or Video? ☐Yes ☐No Address, Number or Location of Relevant Documentation: _____

Agreed To Resolution_____

3. Location_____Description_____

Was the damage shown on the Preconstruction Photographs or Video? ☐Yes ☐No Address, Number or Location of Relevant Documentation: _____

Agreed To Resolution_____

4. Location_____Description_____

Was the damage shown on the Preconstruction Photographs or Video? ☐Yes ☐No Address, Number or Location of Relevant Documentation: _____

Agreed To Resolution_____

5. Location_____Description_____

Was the damage shown on the Preconstruction Photographs or Video? ☐Yes ☐No Address, Number or Location of Relevant Documentation: _____

Agreed To Resolution_____

6. Location_____Description_____

Was the damage shown on the Preconstruction Photographs or Video? ☐Yes ☐No Address, Number or Location of Relevant Documentation: _____

Agreed To Resolution_____

7. Location_____Description_____

Was the damage shown on the Preconstruction Photographs or Video? ☐Yes ☐No Address, Number or Location of Relevant Documentation: _____

Agreed To Resolution_____

Are there any other unresolved issues? ☐**Yes** ☐**No**

List Any Unresolved Issues

1. Location_____ Description_____

Agreed To Resolution_____

2. Location_____ Description_____

Agreed To Resolution_____

3. Location_____ Description_____

Agreed To Resolution_____

4. Location_____ Description_____

Agreed To Resolution_____

5. Location_____ Description_____

Agreed To Resolution_____

6. Location_____ Description_____

Agreed To Resolution_____

7. Location_____ Description_____

Agreed To Resolution_____

8. Location_____ Description_____

Agreed To Resolution_____

9. Location_____ Description_____

Agreed To Resolution_____

Date for Resolution of All Outstanding Issues_____

Property Owner Agreement Signatures:

_____	_____	_____
Date	Contractor Signature	Print Name
_____	_____	_____
Date	CH2M HILL Representative	Print Name
_____	_____	_____
Date	Owner Signature	Print Name

Construction Substantially Complete Property Owner Meeting – Draft for Discussion Purposes Only
Residential Study Area Near the Former Celotex Site 2800 South Sacramento Avenue
Chicago, Illinois 60623

Address_____

Date of Meeting_____ Time of Meeting_____

Post Construction Punch List Given to Owner? Owner Initials Confirming Receipt _____

Additional Documentation Given to Owner? Owner Initials Confirming Receipt _____

Have All Punch List Items and Outstanding Issues Been Resolved? ☐**Yes** ☐**No**

Date Completed_____

Owner Satisfaction Survey

1. Are you satisfied with the work? ☐Yes ☐No
2. Are the fences completely restored? ☐Yes ☐No
3. Was the contractor courteous at all times? ☐Yes ☐No
4. Did the contractor provide two means of access during construction? ☐Yes ☐No
5. Is the grass and landscaping in good condition? ☐Yes ☐No
6. Would you have the excavation contractor work on your property again? ☐Yes ☐No
7. Were utilities interrupted during the work? ☐Yes ☐No
8. Did you receive progress updates during the work? ☐Yes ☐No
9. Were your concerns and questions during the work addressed quickly and courteously? ☐Yes ☐No
10. Was the property in better condition after the work than before? ☐Yes ☐No

Comments

_____

_____

_____

_____

Agreement With the Property Owner That Construction Is Substantially Complete: Signatures:

Date	Contractor Signature	Print Name
Date	CH2M HILL Representative	Print Name
Date	Owner Signature	Print Name

Appendix B

APPENDIX B

Health and Safety Plan

Health and Safety Plan

Residential Removal Action

Near the
Former Celotex Site
2800 South Sacramento Avenue
Chicago, Illinois 60623

Prepared for

Honeywell International Inc.

June 2007

Prepared by

CH2MHILL

HEALTH AND SAFETY PLAN
Residential Removal Action Near the Former Celotex Site
2800 South Sacramento Avenue
Chicago, Illinois

PHONE

Project Number: 360216

Project Manager: Alan Jones/MKE 414-272-1052

Safety Coordinator (SC): Jim Mallison/CHI.....773-693-3800 x202

Honeywell H&S Program Manager (HSPM): Bill Berlett..... 773-693-3800 x-316
cell: 847-770-0209

Project H&S Manager (HSM): Bill Berlett/CHI ..... see above

Preparation Date: April 12, 2007

Revision Date: June 8, 2007

Expiration Date: December 31, 2007

APPROVALS

Project Manager:

_____
(DATE)

Safety Coordinator

_____
(DATE)

Honeywell Program or Project Health and Safety Manager:

CIH/CSP

April 12, 2007
(DATE)

This Health and Safety Plan is valid only for this specific project as described in Section 3.0. It is not to be used for other projects or subsequent phases of this project without the written approval of the Honeywell Program Health and Safety Manager. **A copy of this plan is to be maintained at the site at all times.**

Change Management Form

Honeywell Project HS&E Change Management Form

*This evaluation form should be reviewed on a **continuous** basis to determine if the current site health and safety plan adequately addresses ongoing project work, and should be completed whenever new tasks are contemplated or changed conditions are encountered..*

Project Task:	Remedial Construction		
Project Number:	360216	Project/Task Manager:	Alan Jones/MKE
Name:	Residential Properties Near the Former Celotex Facility – Chicago, Illinois	Safety Coordinator	Jim Mallison/CHI

	Evaluation Checklist	Yes	No
1.	Have the CH2MHILL staff listed in the original HSP/FSI changed?		
2.	Has a new subcontractor been added to the project?		
3.	Is any chemical or product to be used that is not listed in Attachment 2 of the plan?		
4.	Have additional tasks been added to the project, which were not originally addressed in the plan?		
5.	Have new contaminants or higher than anticipated levels of original contaminants been encountered?		
6.	Have other safety, equipment, activity or environmental hazards been encountered that are not addressed in the plan?		

If the answer is "YES" to Question 3, an HSP/FSI revision is NOT needed. Please take the following actions:

- Add the chemical to Attachment 2;
- Ensure employees handling the chemical are trained; and
- Ensure training documentation is added to Attachment 3.

If the answer is "YES" to Questions 1, 2 or 4-6, an HSP/FSI revision MAY BE NEEDED. Please contact Bill Berlett (773-693-3800 x316) directly.

Emergency Contacts

24-hour CH2M HILL Emergency Beeper – (720) 286-4911

CH2M HILL Occupational Health Nurse – 1-800-756-1130

Medical Emergency – 911 **Fire/Spill Emergency -- 911** **Security & Police – 911** Local Facility Emergency Response Number: N/A	**CH2M HILL Medical Consultant** Health Resources Dr. Jerry H. Berke, M.D., M.P.H. *600 West Cummings Park, Suite 3400* Woburn, MA 01801-6350 1-781-938-4653 (8 am to 11 pm EST) 1-800-350-4511 (after hours and on weekends) (After hours calls will be returned within 20 minutes)
Client Contact Name: Chuck Geadelmann Company: Honeywell Title: Remediation Manager Phone: 952-830-3685	**Site Contact** Name: N/A Company: Title: Phone:
Honeywell Health, Safety & Environment Program Manager (HSPM) Name: Bill Berlett/CHI Phone: 773-693-3800 x 316 Cell: 847-770-0209 Fax: 773-693-3823	**Environmental Compliance Coordinator (ECC)** Name: Linda Hickok/SYR Phone: (315) 422-7250 x229
Project Health & Safety Manager (HSM) Name: Bill Berlett Phone: see above Cell: Fax:	**Safety Coordinator (SC)** Name: Jim Mallison/CHI Phone: 773-693-3800 x202 Cell Phone:
Project Manager (PM) Name: Alan Jones/MKE Phone:414-272-1052 Cell Phone: **Program Manager** Name: Joel Wipf/CHI Phone: 773-693-3800 x253 Cell Phone: 773-793-0468	**Regional Human Resources Department (Workers' Compensation Contact)** Name: Cindy Bauder/WDC Phone: 703/471-6405 ext. 4243
Federal Express Dangerous Goods Shipping Phone: 800/238-5355 **CH2M HILL Emergency Number for Shipping Dangerous Goods** Phone: 800/255-3924	**Worker's Compensation:** Contact Regional HR dept. to have form completed or contact Albert Jerman after hours: 303-741-5927 **Automobile Accidents:** Rental: Linda Anderson/DEN 720-286-2401 CH2M HILL owned vehicle: Zurich Insurance Co. 800-987-3373
Facility Alarms: N/A	**Evacuation Assembly Area(s):** TBD by SC
Facility/Site Evacuation Route(s): TBD by SC	

Hospital Name/Address:

Mt. Sinai

1501 S. California
Chicago, Illinois
Phone: 773-542-2000

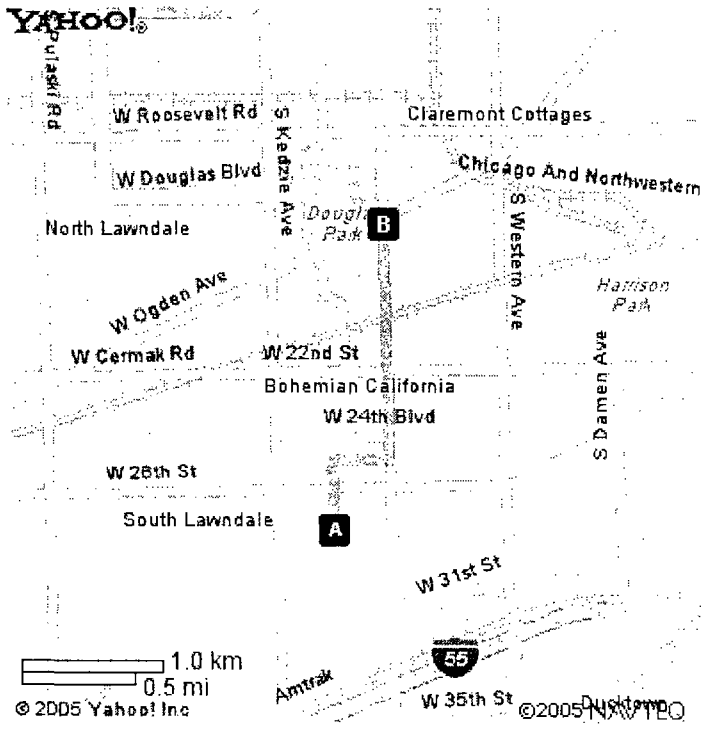
Directions to Hospital

Celotex, Chicago, Illinois

Hospital Route Map and Directions

From the site travel north on Sacramento approximately three blocks to 25th Street. Turn right and travel east on 25th Street approximately 2 blocks to California Avenue. Turn left on California and travel north approximately one mile to the hospital, which will be on the right side of the street.

Please Note: The above directions start at the former Celotex facility address at 2800 S. Sacramento Avenue. The starting direction shall change as the location of exact site changes. Please ensure that all field workers are aware of this change. The map below is given for reference.



Site Map

This page is reserved for a Site Map.

Note locations of Support, Decontamination, and Exclusion Zones; site telephone; first aid station; evacuation routes; and assembly areas.

The Site Map will be attached to the HSP prior to the start of field work.

Contents

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Acronyms and Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
APR	air-purifying respirator
cm	centimeter
CNS	central nervous system
COPC	chemical of potential concern
CPR	cardiopulmonary resuscitation
Cr	chromium
dBA	decibel (A-weighted scale)
DEET	N,N-diethyl-meta-toluamide
DOT	Department of Transportation
ECC	Environmental Compliance Coordinator
GFCI	ground fault circuit interrupter
Hazwoper	Hazardous waste operations and emergency response
Honeywell	Honeywell International Inc.
HR	heart rate
HS&E	health, safety, and environment
HSM	Health and Safety Manager
HSPM	Health and Safety Program Manager
IDLH	immediately dangerous to life and health
IRF	incident report form
JHA	job hazard analysis
LID	Legal and Insurance Department
MSDS	material safety data sheet
NIOSH	National Institute for Occupational Safety and Health
NSC	National Safety Council
OSHA	Occupational Safety and Health Administration

PAH	polynuclear aromatic hydrocarbon
PAPR	powered air-purifying respirator
PCB	poly-chlorinated biphenyl
PCE	tetrachlorethene
PEL	permissible exposure limit
PFD	personal flotation device
PIP	photoionization potential
PM	Project Manager
PPE	personal protective equipment
ppm	parts per million
PTSP	pre-task safety plan
RES	Remediation and Environmental Services
RQ	reportable quantity
SC	Safety Coordinator
SCBA	self-contained breathing apparatus
SOP	standard of practice
SPCC	spill prevention, control, and countermeasures
SSR	Subcontractor Safety Representative
TCE	trichloroethene
TLV	threshold limit value
TSDF	treatment, storage, and disposal facility

1.0 Introduction

1.1 About This Document

This Health, Safety and Environment (HS&E) Plan will be kept on the site during all field activities conducted under the Honeywell International Inc. (Honeywell) Alliance program. The plan will be amended or revised as project activities or conditions change or when supplemental information becomes available. The plan adopts, by reference, the Standards of Practice (SOPs) in the CH2M HILL *Health, Safety, and Environmental Protection (HS&E) Program Manual*. In addition, this plan adopts procedures in the project Work Plan and incorporates applicable elements of Honeywell's HS&E requirements. The Safety Coordinator (SC) is to be familiar with the SOPs contained in the HS&E Program Manual and the contents of this plan. The project Health and Safety Manager (HSM) must review and approve any changes to this plan.

CH2M HILL personnel and subcontractors must sign the CH2M HILL Employee Sign-Off Form included in Attachment 1 after reading/reviewing this HS&E Plan.

1.2 Site Background

The residential removal action area consists of individual residential properties within an area bounded by 26th Street to the north, Kedzie Avenue to the west, 31st Street to the south and Sacramento Avenue to the east. The residential study area encompasses approximately 58 acres not including the former Celotex site, which consists of 20 acres formerly owned by The Celotex Corporation (Celotex) and currently owned by the 2600 Sacramento Corporation, and a 2-acre parcel to the southwest sometimes referred to as the Palumbo parcel and currently owned by Monarch Asphalt (Monarch).

The Site is situated in a multi-use area that includes residential, commercial, manufacturing, governmental, and industrial establishments. The Cook County Correctional Facility is located east of the Main Site, on the east side of Sacramento Avenue and the former Atchison, Topeka & Santa Fe railroad line crosses a portion of the area to the northwest. Residential and commercial properties are located north and west of the Site and industrial property is located to the south. The Chicago Sanitary and Ship Canal is located approximately 1,500 feet south of the Site.

The Main Site was used for making, storing and selling asphalt-roofing products. Former operations at the Main Site during the approximate period of 1911 to 1989 may have resulted in the release of polynuclear aromatic hydrocarbons (PAHs) to the ground and into the air. Facility closure (1989), demolition of the Main Site (1993), and subsequent actions have been completed and it has been determined that there are no known ongoing releases, associated with historical operations, occurring from the Main Site. The Main Site is currently surrounded by a chain-link fence with a single entrance located at the main gate

on Sacramento Avenue. In 2002, the 2600 Sacramento Corporation bought the 20-acre portion of the Celotex property.

Currently, the Main Site is elevated compared to surrounding grade due to the presence of Cover, Fill, and Cap materials placed at the site following facility demolition. An approximately 2-foot thick clay cover (the "Cover") was reportedly placed over the 20 acre parcel following demolition activities. Miscellaneous fill materials from other sources (the "Fill"), such as from a construction project at the adjacent Cook County Jail, were likely placed on top of the Cover. Soils beneath the Cover were sampled in 1997 in connection with an Engineering Evaluation and Cost Analysis (EE/CA) performed for Honeywell pursuant to a prior Administrative Order on Consent (AOC). Around 2002, 2600 Sacramento Corporation purchased the Main Site and placed a reported 2 feet of gravel (the "Cap") over the Fill and Cover materials in order to prepare the Main Site for truck staging operations.

Following completion of the EE/CA, USEPA issued an Action Memorandum ("March 2005 Action Memorandum") finding that subsurface contaminants should be addressed by the placement of a 2-foot gravel cap on the Main Site (to the extent one was not already in place) and the recording of certain restrictive covenants. Honeywell and USEPA subsequently entered into a second Administrative Order on Consent ("2006 AOC") whereby Honeywell agreed to perform the activities set forth in the March 2005 Action Memorandum. A Main Site evaluation was conducted in 2006 to assess current Main Site conditions including the thickness and disposition of the Cover, Fill, and Cap material.

Residential soil sampling was conducted in 2006, to characterize the residential study area surrounding the former Celotex Site. USEPA defined the residential area requiring sampling as within the boundary set by Whipple Avenue, Sacramento Avenue, 28th Street, and 26th Street (NE quadrant) and Troy Street, Albany Street, 28th Street, and 31st Street (SW quadrant). In addition, Honeywell voluntarily agreed to perform sampling within a larger area, although no connection has been made between these areas and the site. The residential properties sampled are bounded by 26th Street to the north, Kedzie Avenue to the west, 31st Street to the south, and Sacramento Avenue to the east.

Soil within areas of the residential properties with exposed surface and shallow subsurface soil was sampled. Soil samples were analyzed for polycyclic aromatic hydrocarbons (PAHs). The specific compounds reported consist of the following seven PAHs that contribute to the benzo(a)pyrene equivalent (BAPEQ) concentration:

- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Chrysene
- Dibenzo(a,h) anthracene
- Indeno(1,2,3-cd)pyrene

The USEPA mandated cleanup of soils with BAPEQ results greater than 10 ppm in the northeast (NE) and southwest (SW) quadrants of the residential study area. Honeywell has

volunteered to remove additional soils above 2 ppm BAPEQ to a maximum depth of three feet within both the NE and SW quadrants, and voluntary/northwest area.

1.3 Description of Tasks

Refer to project documents (e.g., Field Project Start-up Form or the project Work Plan) for detailed task information. A task hazard analysis has been performed for each task and is included below while project-specific hazard controls are provided in the next section. Tasks other than those listed below require an approved amendment or revision to this plan before tasks begin. Refer to Hazwoper Compliance Plan Section of this HS&E Plan for procedures related to "clean" tasks that do not involve hazardous waste operations and emergency response (Hazwoper).

1.3.1 Hazwoper-Regulated Tasks

The following tasks are regulated under the Health and Safety Code (H&SC), Section 1910.120.

- Management of all Subcontractors and vendor activities onsite during the execution of this work.
- Site preparation, including protecting designated vegetation and preparation of staging area.
- Site clearing, including removal of identified vegetation and fencing.
- Survey and establish control points to document start and finish elevations and depth of the excavations.
- Excavation of approximately 21,400 tons of soil with elevated levels of PAHs from designated properties in depths ranging from 1 foot to 3 feet below grade.
- Transportation of approximately 21,400 tons of soil with elevated levels of PAHs to a licensed landfill designated by Honeywell. Honeywell will contract with the landfill and pay for landfill disposal fees directly.
- Excavated soil sampling for disposal acceptance to be performed prior to transportation.
- Backfill of excavated area with specified material.
- Restoration of excavated surfaces and work areas according to plans.
- Interim maintenance of restored features

1.3.2 Non-Hazwoper-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state Hazwoper regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-Hazwoper-trained personnel. The following tasks are considered non-hazardous.

- Site visits that do not include entry into exclusion zones

1.3.3 Environmental-Regulated Tasks and Conditions

Project tasks and site conditions that can impact the environment and are otherwise subject to environmental regulation are included in Section 1.3. These items are also known as the

environmental aspects of the project (activities that can interact with the environment). Environmental impacts relating to each task or condition are also presented in Section 1.3, which is used to evaluate the project's significant impacts and control measures specified in Hazard Controls and Safe Work Practices section of this HS&E Plan.

All personnel shall: (1) implement control measures described in Hazard Control Section; (2) obtain appropriate environmental training (e.g., Waste Management or Dangerous Goods Shipping) and (3) seek assistance from the regional Environmental Compliance Coordinator (ECC) for all environmental questions or issues.

1.3.4 Honeywell Permit Required Tasks

The following tasks require a Honeywell permit:

None required at this time.

TASKS	PERMITS ISSUED BY

1.4 Task Hazard Analysis

Table 1-1 presents the hazard analysis for work to be conducted under this HS&E Plan.

1.5 Environmental Impacts

Table 1-2 summarizes the potential environmental impacts of the work to be conducted under this HS&E Plan.

TABLE 1-1
Task Hazard Analysis Table

Tasks	POTENTIAL HAZARDS (Refer to Hazard Control Section for additional information)																										
	Aerial Lifts	Back Injury (Bending/Lifting)	Biological Hazards	Buried Utilities	Cold Stress	Confined Space Entry	Electrical	Elevated Work Areas/Falls	Entanglement	Excavations	Fires	Flying Debris/Objects	Gas Cylinders	Hand and Power Tools	Heat Stress	Heavy Equipment Exposure	Ionizing Radiation	Lockout-Tagout	Noise	Radio-Frequency Radiation	Respiratory Protection	Slips, Trips and Falls	Stairways and Ladders	Suspended Loads	Traffic Exposure	Vehicle Backing Exposure	Visible Lightning	Working Above or Near Water
Excavation – residential properties		X	X	X			X			X		X	X	X	X	X			X			X	X	X	X	X	X	
Site Preparation – Clearing, removal of miscellaneous materials, fence removal		X	X				X					X	X	X	X	X			X			X	X		X	X	X	
Site Restoration – backfilling, re-vegetating, fence replacement, etc.		X	X	X			X					X	X	X	X	X			X			X	X		X	X	X	
Surveying		X	X				X							X	X				X			X			X	X	X	
Soil Sampling		X	X									X		X	X	X			X			X			X	X	X	
Observation of loading material for offsite disposal			X									X			X	X			X			X		X	X	X	X	
Remediation & construction oversight			X									X	X		X	X			X			X	X		X	X	X	

TABLE 1-2
Environmental Impacts Table

Tasks/Conditions	Impacts						
	Air Pollution	Land Pollution	Land Disposal	Noise Pollution	Water Pollution	Resource Depletion	Human Hazard
Potential Lead-Based Paint on Fencing	X	X	X				X
Chemical/Petroleum Storage or Transport	X	X			X		X
Excavate, Clearing or Grading	X	X		X			
Waste (Haz/Non-Haz) Mgmt, Transport and Disposal	X	X	X		X		X

2.0 Hazard Controls and Safe Work Practices

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CH2M HILL employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. CH2M HILL employees and subcontractors who do not understand any of these provisions should contact the SC for clarification. In addition to the hazard controls specified in this section, the following are required for Honeywell projects.

2.1 Administrative Controls

2.1.1 HS&E Plans

CH2M HILL requires HS&E plans for all field projects and subcontractors are required to submit detailed Job Hazard Analysis for their activities. The HS&E plan provides a risk analysis of each task and identifies the potential hazards and control measures (including personal protective equipment (PPE) and air monitoring requirements) for each task.

2.1.2 Job Hazard Analysis

A job hazard analysis (JHA) is required by CH2M HILL for all tasks unless the HSM specifically determines it is unnecessary. The JHA provides a step-by-step analysis of the activity being performed and identifies the equipment and control measures necessary to conduct the work safely. Each JHA must be reviewed by the work team immediately prior to conducting the work. The JHA can be a source of information for the daily safety meeting. Project-specific JHAs are provided in Attachment 2.

2.1.3 Safety Meetings

CH2M HILL requires that the safety coordinator conduct daily safety meetings to discuss with the field team the task to be performed that day and the potential hazards and mitigation measure. The safety meeting can be used to review the JHA with the team. A Daily Tailgate Safety Briefing Form is included in Attachment 3.

A Pre-Task Safety Plan (PTSP) must be developed each day prior to performing specific work tasks. Each member of the team performing the task must be included in the planning so all are aware of the task hazards and controls. A copy of a PTSP is included in Attachment 4.

2.1.4 Self-Assessments

Project Activity Self-Assessment Checklists are contained in Attachment 5. These checklists provide a method of verifying compliance with established safe work practices, regulations,

and industry standards pertaining to hazardous activities. The checklists can be used by any CH2M HILL employee who may be exposed to a hazardous activity or by the SC when providing oversight of a subcontractor performing a hazardous activity. Self-assessments shall be completed prior to subjecting CH2M HILL staff to hazardous operations for any reason.

Self-assessment checklists should be completed every week during excavation activities.

If hazardous conditions exist or are apparent during the self-assessment, immediately notify the employees in the area and do not continue work in that area until the conditions are safe. If an imminent danger situation (immediately life threatening or would cause serious injury) exists, immediately stop work, warn all personnel in danger and notify the appropriate safety representative and the CH2M HILL SC. Non-compliance issues identified during the self-assessment shall be immediately rectified. If corrective action assistance is required, the HSM should be contacted for guidance.

Any site-specific requirements outlined in this HS&E Plan that are more stringent than those contained in the self-assessment checklists are to take precedence. The self–assessment checklists are based upon minimum regulatory compliance and some site-specific requirements may be more stringent. The self-assessment checklists, including documented corrective actions, shall be made part of the permanent project records and maintained by the SC.

2.1.5 Site Compliance/Audits

In order to ensure compliance with requirements contained in the Honeywell Remediation and Environmental Services (RES) Health and Safety Manual, Specification 01620, and with this HS&E Plan, audits will be conducted by a HS&E professional as follows: a minimum of once during project activities.

2.1.6 Interventions

Honeywell requires that we intervene whenever we see someone exhibiting an unsafe behavior or working in unsafe conditions. When such a situation is observed, an intervention is performed by talking to the person about how the task could be done more safely. Safe Work Observation forms must be completed on a weekly basis, at a minimum, by the SC or FTL. Each completed form must be maintained with the HS&E Plan field documents, and then transferred to project files upon the completion of the field work. A copy of a Safe Work Observation form is included in Attachment 6.

2.2 Project-Specific Hazards and Controls

The following sections describe potential hazards and control measures that may be encountered during site activities.

2.2.1 Respiratory Protection

If site conditions warrant, the following requirements for respiratory protection will include:

- Respirator users must have completed appropriate respirator training within the past 12 months. Level C training is required for air-purifying respirators (APR) use and Level B training is required for supplied-air respirators (SAR) and self-contained breathing apparatus (SCBA) use. Specific training is required for the use of powered air-purifying respirators (PAPR).
- Respirator users must complete the respirator medical monitoring protocol and been approved for the specific type of respirator to be used.
- Tight-fitting facepiece respirator (negative or positive pressure) users must have passed an appropriate fit test within past 12 months.
- Respirator use shall be limited to those activities identified in this plan. If site conditions change, the HSM shall be notified to amend the respiratory protection requirements.
- Tight-fitting facepiece respirator users shall be clean-shaven and shall perform a user seal check before each use.
- Canisters/cartridges shall be replaced according to the change-out schedule specified in this plan. Respirator users shall notify the SC of any detection of vapor or gas breakthrough. The SC shall report any breakthrough events to the HSM.
- Respirators in regular use shall be inspected before each use and during cleaning
- Respirators in regular use shall be cleaned and disinfected as often as necessary to ensure they are maintained in a clean and sanitary condition.
- Respirators shall be properly stored to protect against contamination and deformation.
- Field repair of respirators shall be limited to routine maintenance. Defective respirators shall be removed from service.
- When breathing air is supplied by cylinder or compressor, the SC shall verify the air meets Grade D air specifications.
- The SC shall complete the H&S Self-Assessment Checklist – Respiratory Protection included in Attachment 5 of this plan to verify compliance with CH2M HILL's respiratory protection program.

Refer to CH2M HILL HSE SOP-121, Respiratory Protection, for additional information.

2.2.2 Exposure to Public Vehicular Traffic

The following precautions must be taken when working around traffic, and in or near an area where traffic controls have been established by a contractor.

- Exercise caution when exiting traveled way or parking along street – avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.

- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.
- Remain aware of factors that influence traffic related hazards and required controls – sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route -- behind an established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic – never assume drivers are looking out for you
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from traffic, a "buddy system" should be used, where one worker is looking towards traffic.
- When working on highway projects, obtain a copy of the contractor's traffic control plan.
- Work area should be protected by a physical barrier – such as a K-rail or Jersey barrier.
- Review traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: 1) convey a clear meaning, 2) command respect of road users, and 3) give adequate time for proper traffic response. The adequacy of these devices are dependent on limited sight distance, proximity to ramps or intersections, restrictive width, duration of job, and traffic volume, speed, and proximity.
- Either a barrier or shadow vehicle should be positioned a considerable distance ahead of the work area. The vehicle should be equipped with a flashing arrow sign and truck-mounted crash cushion. All vehicles within 40 feet of traffic should have an orange flashing hazard light atop the vehicle.
- Except on highways, flaggers should be used when 1) two-way traffic is reduced to using one common lane, 2) driver visibility is impaired or limited, 3) project vehicles enter or exit traffic in an unexpected manner, or 4) the use of a flagger enhances established traffic warning systems.
- Lookouts should be used when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns workers. Vehicles should be parked at least 40 feet away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.

Refer to CH2M HILL HSE SOP-216, Traffic Control, for additional information.

2.2.3 Noise Hazards

Previous surveys indicate that heavy equipment such as drilling or excavation equipment may produce continuous and impact noise at or above the action level of 85 decibels (dBA).

All CH2M HILL personnel within 25 feet of operating equipment, or near an operation that creates noise levels high enough to impair conversation, shall wear hearing protective devices (either muffs or plugs). Personnel will wash their hands with soap and water prior to inserting ear plugs to avoid initiating ear infections.

Refer to CH2M HILL HSE SOP-108, Hearing Conservation Program, for additional information.

Additional, site-specific noise information can be found in Arrowhead's Environmental Monitoring Plan, Appendix F to the Residential Removal Action Work Plan.

2.3 General Hazards and Controls

2.3.1 General Practices and Housekeeping

General "good housekeeping" practices include:

- Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness require enough illumination intensity to read a newspaper without difficulty.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces.

Refer to CH2M HILL HSE SOP-209, General Practices, for additional information.

2.3.2 Hazard Communication

The SC is to perform the following:

- Complete an inventory of chemicals brought to the site by CH2M HILL using Attachment 7.

- Confirm that an inventory of chemicals brought on site by CH2M HILL subcontractors is available.
- Request or confirm locations of Material Safety Data Sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which CH2M HILL employees potentially are exposed.
- Copies of all applicable MSDSs will be placed in Attachment 8.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employees required chemical-specific hazard communication training using Attachment 9.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

Refer to CH2M HILL HSE SOP-107, Hazard Communication, for additional information.

2.3.3 Shipping and Transportation of Chemical Products

Chemicals brought to the site might be defined as hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship the materials or transport them by road must receive CH2M HILL training in shipping dangerous goods. All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the HSM or the Equipment Coordinator for additional information.

Refer to CH2M HILL's Procedures for Shipping and Transporting Dangerous Goods for additional information.

2.3.4 Lifting

Proper lifting techniques must be used when lifting any object:

- Plan storage and staging to minimize lifting or carrying distances.
- Split heavy loads into smaller loads.
- Use mechanical lifting aids whenever possible.
- Have someone assist with the lift -- especially for heavy or awkward loads.
- Make sure the path of travel is clear prior to the lift.

Refer to CH2M HILL HSE SOP-112, Lifting, for additional information.

2.3.5 Fire Prevention

Fire prevention measures include the following:

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or

combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:

- be maintained in a fully charged and operable condition,
- be visually inspected each month, and
- undergo a maintenance check each year.

- The area in front of extinguishers must be kept clear.
- Post "Exit" signs over exiting doors, and post "Fire Extinguisher" signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

Refer to CH2M HILL HSE SOP-208, Fire Prevention, for additional information.

2.3.6 Electrical

Electrical safety measures include:

- Only qualified personnel are permitted to work on unprotected energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service.
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.
- Extension cords must be:
  - equipped with third-wire grounding.
  - covered, elevated, or protected from damage when passing through work areas.
  - protected from pinching if routed through doorways.
  - not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.

- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus ½ inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

Refer to CH2M HILL HSE SOP-206, Electrical, for additional information.

2.3.7 Stairways and Ladders

Safety guidelines pertaining to stairways and ladders include the following:

- Stairway or ladder is generally required when a break in elevation of 19 inches or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials
- Straight and extension ladders must be tied off to prevent displacement
- Ladders that may be displaced by work activities or traffic must be secured or barricaded
- Portable ladders must extend at least 3 feet above landing surface
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder

- Stepladders are to be used in the fully opened and locked position
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder
- Fixed ladders $\geq$ 24 feet in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than six feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

Refer to CH2M HILL HSE SOP-214, Stairways and Ladders, for additional information.

2.3.8 Heat Stress

Prevention measures to avoid heat stress include:

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SC to avoid progression of heat-related illness.

Symptoms and treatment of heat stress are summarized in Table 2-1.

TABLE 2-1
Symptoms and Treatment of Heat Stress

Type of Heat Stress	Signs and Symptoms	Treatment
Heat Syncope	Sluggishness or fainting while standing erect or immobile in heat.	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.
Heat Rash	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.
Heat Cramps	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Remove to cooler area. Rest lying down. Increase fluid intake.
Heat Exhaustion	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.
Heat Stroke	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.	Cool rapidly by soaking in cool–but not cold–water. Call ambulance, and get medical attention immediately!

Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress.

- The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period.
- The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse.
- If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same.
- If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent.
- The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

Refer to CH2M HILL HSE SOP-211, Heat and Cold Stress, for additional information.

2.3.9 Cold Stress

Prevention measures to avoid cold stress include:

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.

- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- Wind-Chill Index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.
- Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SC to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast – be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

Symptoms and treatment of cold stress are summarized in Table 2-2.

TABLE 2-2
Symptoms and Treatment of Cold Stress

Type of Cold Stress	Signs and Symptoms	Treatment
Immersion (Trench) Foot	Feet discolored and painful; infection and swelling present.	Seek medical treatment immediately.
Frostbite	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Remove victim to a warm place. Re-warm area quickly in warm–but **not** hot–water. Have victim drink warm fluids, but **not** coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.
Hypothermia	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.	Remove victim to a warm place. Have victim drink warm fluids, but not coffee or alcohol. Get medical attention.

Refer to CH2M HILL HSE SOP-211, Heat and Cold Stress, for additional information.

2.3.10 Compressed Gas Cylinders

Safety measures pertaining to handling compressed gas cylinders include:

- Valve caps must be in place when cylinders are transported, moved, or stored.

- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.
- Cylinders must be secured in an upright position at all times.
- Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.
- Cylinders must be secured on a cradle, basket, or pallet when hoisted; they may not be hoisted by choker slings.

2.3.11 Procedures for Locating Buried Utilities

Local Utility Mark-Out Service: Contact DIGGER (the City of Chicago one call provider) prior to conducting any subsurface work activities.

Name:	DIGGER
Phone:	312-744-7000

Procedures for locating buried utilities include:

- Contact your local utility location service.
- Where available, obtain utility diagrams for the facility.
- Review locations of sanitary and storm sewers, electrical conduits, water supply lines, natural gas lines, and fuel tanks and lines.
- Review proposed locations of intrusive work with facility personnel knowledgeable of locations of utilities. Check locations against information from utility mark-out service.
- Where necessary (e.g., uncertainty about utility locations), excavation or drilling of the upper depth interval should be performed manually.
- Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change n advancement of auger or split spoon).
- When the client or other onsite party is responsible for determining the presence and locations of buried utilities, the SSC should confirm that arrangement.

2.3.12 Confined Space Entry

No confined space entry will be permitted. Confined space entry requires additional health and safety procedures, training, and a permit. If conditions change such that confined-space entry is necessary, contact the HSM to develop the required entry permit.

When planned activities will not include confined-space entry, permit-required confined spaces accessible to CH2M HILL personnel are to be identified before the task begins. The

SSC is to confirm that permit spaces are properly posted or that employees are informed of their locations and hazards.

Refer to CH2M HILL SOP HS-203, Confined Space Entry, for additional information.

2.3.13 Backing Field Vehicles

The following precautions shall be implemented to prevent incidents during backing of field vehicles:

- Avoid backing whenever possible. The SC will be responsible for determining when "backing" is allowed. If extensive backing is required, alarms that sense when an object is close by must be used.
- If backing is required, there MUST BE a spotter. If a spotter is not available, the driver MUST walk completely around the vehicle before backing up.
- When "backing" is likely to be a part of the activities, it must be discussed in the daily safety briefings to remind staff of the hazards and controls.
- Learn your vehicle's blind spots.

2.3.14 Driving in Areas with Tall Grass/Brush

Driving in areas with tall grass/brush can present a potential fire hazard if the grass/brush gets caught under and/or remains in contact with the vehicle exhaust system. Employees should exercise the following precautions:

- When stopping vehicle, ensure it is in an area where grass is not tall.
- Do not leave vehicle idling once stopped.
- When possible, try to drive through areas where grass is not tall or grass has been beaten down.
- Ensure that a fire extinguisher is available for each vehicle.
- Keep fire extinguisher readily available in passenger area of vehicle while driving.
- Keep fire extinguisher outside of vehicle upon stopping.
- Address fire hazards and controls in daily safety briefings as appropriate.

2.3.15 Severe Weather

The following precautions should be taken in the event of severe weather:

- Identify "Take Shelter" areas before starting project.
  - If it is necessary to seek shelter, notify the Project Manager and Client Representative.
- Work may proceed in light rain, although workers should wear rain gear.

- Exposure to slips, trips and falls is increased during rainy and snowing conditions.
- Take cover in field vehicle during adverse weather conditions (e.g., high winds, heavy rain, or lightning).
- Work shall cease and cover sought in the event of lightning or tornado warnings.

2.3.16 Resident Protection

At a minimum, the following shall apply:

- Work zones shall be clearly defined by orange construction fencing during remedial field activities – site residents will be requested to not enter work zones during active remedial field activities. When residents are walking, standing or near work zones, the Safety Coordinator (SC) or designee, shall inform residents of potential site hazards and recommend they stand clear to minimize potential hazards associated with the on-going, nearby work activities.
- Water suppression will be used, as necessary, during soil removal and backfill activities to minimize dust levels.
- Dust monitoring will be performed daily during field activities to monitor the dust levels within the working areas. Action levels have been prescribed to provide for appropriate levels of protection for workers and residents. See Section 5.0 for specific details regarding dust monitoring.
- Workers inside the work zones shall wear personal protective equipment as prescribed in Section 4.0. Safety to residents is of the utmost importance. Contact with contaminated materials presents the most significant exposure risk to residents. Decontamination materials will be available for residential use, as requested, if inadvertent contact is made with potentially contaminated materials, such as dust residue from sidewalks.

The SC shall continuously assess the working area to determine if additional safety measures are appropriate based upon actual site conditions.

2.4 Biological Hazards and Controls

2.4.1 Snakes

Each year, about 9,000 people are bitten by poisonous snakes in the U.S. Only about 15-25% actually receive venom, and U.S. deaths from snakebites only total about 12-15 people annually. In 2002, there were only 9 snakebite deaths in the US. Most snakebite deaths occur in small, young children whose lack of body mass and immune system development make them more susceptible to snake venom. However, a far larger number of people suffer medical complications ranging from mild to serious problems from improper treatment than the number who die. Therefore, knowing what to do to avoid snakebites, and how to properly treat them if they occur, is critical to preventing permanent injury or death.

Snakes typically are found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings.

Table 2-3 summarizes the measures to be taken (and NOT to be taken) in the event of a snakebite.

TABLE 2-3
Snakebite Response Measures

Things to Do	Things NOT to Do
• Move victim, and everybody else, away from snakes. • Identify the snake - kill it ONLY if necessary. • Lie the victim down with the bite area at or just slightly below the heart level. • Calm the victim by explaining the facts about snakebites. • Immobilize the bite area with a splint and sling, if possible. • Remove constricting jewelry or clothing unless the victim resists. • Get professional medical help as quickly as possible.	• Do not cut and suck the wound, either manually or orally. • Do not apply a tight, narrow band tourniquet - these cause amputations! • Do not apply ice or heat packs, and do not use a stun gun on the bite area. • Do not give the victim any food or drink, and this applies especially to alcohol! • Do not allow the victim to become alarmed, excited or agitated, as this will only increase blood flow and the chances of getting poison to the heart. • Do not allow victim to exercise vigorously, including running. • If you must kill the snake, then do NOT touch its head for at least one hour. If you must kill a snake for identification purposes, then completely remove its head and bury it. Snake heads have been documented as capable of biting and injecting poison an hour or more after decapitation. • Do not waste valuable time on unimportant acts like trying to find a snake to identify or kill it. Hemotoxic poison will start to enter the blood stream within 30 minutes, and neurotoxic poison works even faster.

Following the above protocols (Table 2-3) will greatly reduce the chances of serious complications from snakebites. Bear in mind that few people die from poisonous snakebites and the vast majority of snakebite victims are not even venomized. Snakes generally reserve their venom for prey they intend to eat. Snakebites are more a nuisance than a serious medical problem in most cases.

2.4.2 Poison Ivy and Poison Sumac

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas. Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention. Additional information and photographs of each are provided in Attachment 10.

2.4.3 Ticks

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into boots; spray **only outside** of clothing with permethrin or permanone and spray skin with only DEET; and check yourself frequently for ticks.

If bitten by a tick, grasp it at the point of attachment and carefully remove it. After removing the tick, wash your hands and disinfect and press the bite areas. Save the removed tick. Report the bite to human resources. Symptoms of tick-borne diseases include chills, fever, headache, fatigue, stiff neck, and bone pain. Other symptoms include:

- Lyme Disease - A rash might appear that looks like a bulls eye with a small welt in the center.
- Rocky Mountain Spotted Fever – A rash of red spots may appear under the skin 3-10 days after the tick bite.

If any of these symptoms appear, seek medical attention.

2.4.4 Bees and Other Stinging Insects

Bee and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past, and inform the SSC and/or buddy. If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.

2.4.5 Bloodborne Pathogens

Exposure to bloodborne pathogens may occur when rendering first aid or cardiopulmonary resuscitation (CPR), or when coming into contact with landfill waste or waste streams containing potentially infectious material. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.

Refer to CH2M HILL HSE SOP-202, Bloodborne Pathogens, for additional information regarding exposure controls and PPE.

2.4.6 Mosquito Bites

Due to the recent detection of the West Nile Virus in the Southeastern United States it is recommended that preventative measures be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing permethrin or DEET since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 35%) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.

Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

Symptoms of Exposure to the West Nile Virus

The West Nile Virus incubation period is from 3-15 days. Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

If you have any questions or to report any suspicious symptoms, contact the project HSM.

2.4.7 Spiders

Black Widow

Description

The female black widow spider is almost twice the size of its male counterpart. Although both are considered venomous, only the female spider is able to bite and envenomate humans. During the summer months, the female black widow spider is the most venomous. The spider undergoes multiple moltings throughout the year and often changes color. The female is most often shiny black in color and has a rounded abdomen with a red distinctive hourglass on its ventral surface. Occasionally, two red spots may be seen instead of the hourglass configuration.

Symptoms

When bitten by a black widow spider, the symptoms usually begin with a pinprick sensation, followed by the appearance of mild swelling and redness around the bite wound. It is not unusual for the patient to be unaware of the bite until a local reaction has occurred. Close evaluation of the site may reveal two fang marks. The first hour after the bite, pain often increases around the area of the bite and spreads to the entire body. Upper extremity bites usually lead to spasm of the upper trunk muscles; bites of the lower extremity often lead to abdominal spasms.

Other common symptoms include an abnormal sensation in the extremities (i.e., prickling or burning), deep tendon reflexes, headache, anxiety, nausea, vomiting, tremor, restlessness, and seizures may also be seen. Symptoms usually resolve within 24-48 hours

General treatment includes local wound care, a tetanus shot, and pain medication if needed. Airway, breathing, and circulation should be monitored closely.

Prevention

Wear gloves, heavy garments that are fully buttoned, and protective footwear when working in areas where spiders commonly inhabit (i.e., dark and protected spaces such as wells, rock and wood piles, pipes, gloves, boots, etc.)

Brown Recluse

Description

The brown recluse spider is approximately 1 centimeters (cm) in body length, with a leg span of up to 2.5 cm. The color of these spiders is usually tan to brown.

Symptoms

Envenomation is initially painless for most victims. Within the first few hours, pain and redness occur at the site of the bite. The bite mark may resemble a bulls eye and is most often 1-5 cm in diameter. Over the next few days, the bite area will ulcerate and spread in diameter and into the fatty tissue below. In one week after the bite a large area of skin and tissue can be involved. Surgical intervention is usually required to remove the bite area.

Systemic reactions, while uncommon, can occur in some individuals. These symptoms usually occur within 2 days of the bite and can include fever, chills, rash, nausea, vomiting, and possible renal failure.

General treatment includes local wound care, tetanus inoculation, immobilization, elevation, observation, and surgical removal of the wound.

Prevention

Wear gloves, heavy garments that are fully buttoned, and protective footwear when working in areas where spiders commonly inhabit (i.e., dark and protected spaces such as wells, rock and wood piles, pipes, gloves, boots, etc.)

Additional information regarding spiders can be found in Attachment 10.

2.5 Chemicals of Potential Concern

Table 2-4 summarizes information pertaining to chemicals of potential concern (COPCs) at the project site.

TABLE 2-4
Chemicals of Potential Concern Summary Table

Contaminant [a]	Impacted Media [b]	Maximum Conc(s) [c]	Exposure Limit [d]	IDLH [e]	Symptoms and Effects of Exposure	PIP [f] (eV)
Poly-aromatic Hydrocarbons (PAHs) (Ca)			0.2 mg/m^3	80 mg/m^3	Eye, skin and respiratory tract irritation. Prolonged contact with skin may cause dermatitis and hyperpigmentation of skin.	UK

Notes:

[a] "Ca" = potential occupational carcinogen.

[b] Specify all impacted media to which site workers may be exposed using the following definitions:

A (Air)	SB (Soil)	SW (Surface Water)
D (Drums)	SL (Sludge)	TK (Tank)
GW (Groundwater)	SV (Soil Vapor)	

[c] The maximum concentrations detected at the site for each media of concern.

[d] The lower of the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) is listed. Values are given in parts per million (ppm) or milligrams per cubic meter (mg/m^3).

[e] IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); ND = Not determined.

[f] PIP = photoionization potential; NA = Not applicable; UK = Unknown.

Workers may also be exposed to chemicals used during sampling and remediation activities. MSDSs are required for all virgin (i.e., non-contaminant) chemicals brought to the site. These MSDSs are presented as Attachment 8.

A summary of the personal protective equipment required to minimize exposure to environmental contaminants and virgin chemicals is presented in Section 4.

2.6 Potential Routes of Exposure

Potential routes of exposure include the following:

- **Dermal:** Skin contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Personal Protective Equipment Section of this plan.
- **Inhalation:** Inhalation of vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in the PPE and Air Monitoring/Sampling Sections of this plan, respectively.
- **Ingestion:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

3.0 Roles and Responsibilities

3.1 CH2M HILL Staff Responsibilities

3.1.1 Project Manager

The CH2M HILL project manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HS&E management process. The PM has overall management responsibility for the tasks listed below. The PM may delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this HS&E Plan:

- Incorporate standard terms and conditions, and contract-specific HS&E roles and responsibilities in the contract with the client.
- Budget for the appropriate level of HS&E oversight during field activities. Contact the HSM for budget requirements and guidelines.
- Manage the site and interface with third parties in a manner consistent with our contract and subcontract agreements and the applicable standard of reasonable care.
- Ensure that the overall, project-specific HS&E goals are fully and continuously implemented.
- Ensure that CH2M HILL's SC is completing all duties outlined in this HS&E Plan.
- Promoting a safety culture with onsite CH2M HILL personnel and setting the example for safe behavior.

The PM has the following additional responsibilities when subcontractors are hired:

- Incorporate standard terms and conditions, and contract-specific HS&E roles and responsibilities in subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors by implementing the CH2M HILL Subcontractor Management Program. This program includes the review of subcontractor pre-qualification questionnaires, training and medical monitoring records, and site-specific safety procedures prior to the start of subcontractor's field operations.
- Ensure that acceptable certificates of insurance, including CH2M HILL as named additional insured, are secured as a condition of subcontract award.
- Maintain copies of subcontracts and subcontractor certificates of insurance, bond, contractor's license, training and medical monitoring records, and project-specific HS&E procedures in the project file accessible to site personnel.

- Provide adequate oversight of subcontractor HS&E practices per the HS&E Plan.

3.1.2 Project Health and Safety Manager

The CH2M HILL Project Health and Safety manager (HSM) is responsible to:

- Support the SC's oversight of HS&E practices and interfaces with onsite third parties per the HS&E Plan.
- Conduct audits, as necessary, to assess site conditions and review HS&E program implementation.
- Assist the PM with HS&E budget guidelines.
- Assist with program implementation as needed.

The HSM has the following additional responsibilities when subcontractors are hired:

- Ensure that subcontractor pre-qualification questionnaires are reviewed and assist as applicable in the acceptance or rejection.
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations.
- Support the SC's oversight of subcontractor's (and lower-tier subcontractor's) HS&E practices per the HS&E Plan.

3.1.3 Safety Coordinator

The Safety Coordinator (SC) shall be onsite for the duration of onsite work and is responsible for verifying that the project is conducted in a safe manner including the following obligations:

- Verify that this HS&E Plan is current and amended when project activities or conditions change.
- Verify that CH2M HILL site personnel and subcontractors read this HS&E Plan and sign the CH2M HILL Employee Sign-Off Form included in Attachment 1.
- Verify compliance with the requirements of this HS&E Plan, applicable contractor health and safety plan(s) and any federal, state, and local regulations.
- Review and understand contractual obligations regarding HS&E roles and responsibilities.
- Manage the site and interfacing with third parties in a manner consistent with our contract/subcontract agreements and the applicable standard of reasonable care.
- Ensure that programs are effectively functioning to prevent and control hazards on the project.
- Verify that all CH2M HILL employees working in the field have the appropriate level of HS&E training, medical surveillance, and drug and alcohol testing for their job duties

including required specialty training (e.g., fall protection, confined space entry) identified in the Hazard Controls and Safe Work Practices Section of this HS&E Plan.

- Conduct an HS&E orientation for all CH2M HILL team members prior to entering the project work areas and deliver field HS&E training as needed based on project-specific hazards and activities.
- Maintain active and visible involvement using open communication with employees regarding safety issues on the project.
- Verify that safety meetings are conducted and document in the project file as needed throughout the course of the project (e.g., as tasks or hazards change).
- Attend Contractor safety meetings and ask questions about access to work areas, safety hazards, precautions and other general safety issues.
- Post required information onsite. An Occupational Safety and Health Administration (OSHA) job-site poster is required at sites where project field offices, trailers, or equipment-storage boxes are established. Contact the HSM for posters.
- Maintain HS&E records and documentation.
- Act as the project "Hazard Communication Coordinator" and perform the responsibilities outlined in the Hazard Communication section of this HS&E Plan.
- Act as the project "Emergency Response Coordinator" and perform the responsibilities outlined in the Emergency Preparedness section of this HS&E Plan.
- Verify that project HS&E forms, permits and self-assessment checklists are being used as outlined in this plan.
- Ensure that the Drug Testing Hospital Kit is available onsite in the event of a serious injury involving hospital, ambulance, or paramedic care. The hospital kit must accompany the injured employee to the hospital so they will get drug tested. For additional information on the Drug Testing Hospital Kits, refer to Attachment 11.
- Verify appropriate PPE use, availability, and training.
- Inform the HSM of any project incident, ensure that an Incident Report Form (IRF) is completed and conduct incident investigations as outlined in the Incident Reporting and Investigation section of this HS&E Plan.
- Facilitate OSHA or other government agency inspections including accompanying inspector and providing all necessary documentation and follow-up.
- Report all incidents to the HSM and/or the Honeywell HSPM immediately. Depending on the type and severity of incident, we may have to report it to Honeywell within hours of occurrence. The Honeywell HSPM will determine what needs to be reported, the timing of the reporting, and coordinate client notification so local and Corporate Honeywell personnel are appropriately notified.

The SC has the following additional responsibilities when subcontractors are hired:

- Verify that project files available to site personnel include copies of executed contracts and certificates of insurance; bond; contractors license; training, medical monitoring, and drug and alcohol testing records; and project-specific HS&E procedures prior to start of subcontractor's field operations.
- Verify that ongoing training, medical monitoring, and drug and alcohol testing requirements are being met (e.g., 8-hour refresher, random drug testing programs, etc).
- Perform oversight and/or assessments of subcontractor HS&E practices per this HS&E plan and verify that project activity self-assessment checklists have been completed (Attachment 5).

3.1.4 CH2M HILL Employees

All personnel are assigned responsibility for safe and healthy operations. This concept is the foundation for involving all employees in identifying hazards and providing solutions. For any operation, individuals have full authority to stop work and initiate immediate corrective action or control. In addition, each worker has a right and responsibility to report unsafe conditions/practices. This right represents a significant facet of worker empowerment and program ownership. Through shared values and a belief that all accidents are preventable, our employees accept personal responsibility for working safely. Each employee is responsible for the following:

- Perform work in a safe manner without injury, illness or property damage.
- Perform work in accordance with company policies, and report near misses, injuries, illnesses, and unsafe conditions.
- Report all incidents, include near misses, immediately to supervisor, and file proper forms with a human resources representative. Contact your HS&E Manager and the Honeywell HSPM to ensure client reporting procedures are met. It is important to do incident notification immediately because, depending on the type of incident, we may be required to report to Honeywell within hours of the event.
- Report all hazardous conditions and/or hazardous activities immediately to a supervisor for corrective action.
- Intervene when an unsafe behavior and/or condition is observed.
- Complete an HS&E orientation prior to being authorized to enter the project work areas.
- Inspect assigned PPE to ensure the absence of defects and proper function.

3.2 CH2M HILL Employee Medical Surveillance, Training, & Drug Testing

Employees assigned to this project will have the following minimum training.

- 40-hour hazardous waste operations training

- 3-day on-the-job experience
- 8-hour annual hazardous waste refresher training.
- Employees who are in an onsite supervisor role will complete 8 hours of hazardous waste supervisor training
- Drug-Free Workplace training (when drug testing is required)
- Honeywell Program orientation
- Site-specific training/orientation

Employees designated as SC will also have completed a 12-hour safety coordinator course. The safety coordinator training course meets the requirements of 29 CFR 1910.120 for on-site supervisor training. An SC must be present during all tasks performed in exclusion or decontamination zones.

The SC and additional designated employees, as necessary, will be certified in first aid and CPR by the American Red Cross, or equivalent. At least one first aid/CPR designated employee must be present during all tasks performed in exclusion or decontamination zones. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training. Additional training requirements are addressed in the specific hazard sections of this plan.

Employees who perform work activities in the decontamination or exclusion zone shall be enrolled in and have a current medical clearance as required by the medical surveillance program for hazardous waste workers.

Pregnant employees shall consult with the Corporate Consulting Physician prior to performing site activities and obtain a physician's statement of the employee's ability to perform hazardous activities before being assigned fieldwork.

Drug testing is required for CH2M HILL employees who engage in certain activities at Honeywell sites (e.g., activities involving heavy equipment or drill rigs). Employees who conduct fieldwork may be required to pass an initial 5-panel drug screen and an alcohol screen two weeks prior to starting field activities. These staff will also be required to enroll in a random testing program for the duration of their work on Honeywell, and will be subject to post-incident and "for cause" testing. Contact the HSM to determine if drug testing is required. If site conditions change and/or additional tasks are added, contact the HSM to determine drug and alcohol testing requirements.

Based on specific work activities/tasks, subcontractor personnel may be required to be drug and alcohol screened prior to conducting their field activities. Please contact the Health and Safety Program Manager (HSPM) for details and to determine if subcontractor personnel require drug testing.

Refer to CH2M HILL HSE SOP-113, Medical Surveillance, SOP-110, Training, and SOP-105, Drug-Free Workplace, for additional information.

3.3 CH2M HILL Subcontractors

The table(s) below list the name of each subcontractor, the subcontractor safety representative, and a description of the subcontracted activities to be performed at the site.

Subcontractor	Arrowhead Contracting, Inc.
Subcontractor Safety Rep	Jeremy Soenen
Subcontractor Onsite Tasks	Site clearing, excavation, backfill, and restoration

Subcontractor	TBD
Subcontractor Safety Rep	
Subcontractor Onsite Tasks	

The subcontractors listed above are covered by this HS&E Plan and must be provided a copy of this document. However, this plan does not address hazards associated with the tasks and equipment for which the subcontractors have been engaged (e.g., drilling, excavation work, electrical). Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit these procedures to CH2M HILL for review before the start of field work. Subcontractors must comply with all established health and safety plan(s) for this project. The CH2M HILL SC should verify that subcontractor employee training, medical clearance, and fit test records are current and must monitor and enforce compliance with the established HS&E Plan(s). CH2M HILL's oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

CH2M HILL team members should endeavor to observe subcontractors' safety performance. This endeavor should be reasonable, and include observation of hazards or unsafe practices that are both readily observable and occur in common work areas. CH2M HILL is not responsible for exhaustive observation for hazards and unsafe practices. The SC is responsible for confirming subcontractor performance against both the subcontractor's task specific safety procedures and applicable self-assessment checklists, as provided in Attachment 5.

HS&E related communications with CH2M HILL subcontractors should be conducted as follows:

- Brief subcontractors on the provisions of this plan, and require them to sign the CH2M HILL HS&E Plan Employee Sign-Off Form, included in Attachment 1.
- Request subcontractor(s) to brief project team on the hazards and precautions related to their work.

- When non-compliant or unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action—the subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When repeat non-compliant or unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented.
- When an apparent imminent danger exists, immediately remove all affected personnel, notify subcontractor safety representative, stop affected work until adequate corrective measures are implemented, and notify the Project Manager, HSM, and SC as appropriate.
- Document all verbal HS&E related communications in project field logbook, daily reports, or other records.

Subcontractors are responsible to:

- Comply with all local, state, and federal HS&E standards; and project/owner HS&E requirements.
- Provide a qualified subcontractor safety representative (SSR) to oversee the subcontractor activities and conduct safety inspections for their work.
- Conduct site-specific orientations for all subcontractor employees.
- Actively participate in the project HS&E program and attend all required safety meetings.
- Meet training, medical monitoring, and drug and alcohol testing requirements for their staff.
- Intervene when they observe unsafe behaviors and/or conditions.
- Maintain equipment and supplies necessary to complete activities in a safe manner.
- Notify the CH2M HILL SC of any injury or incident, including near-misses, immediately and submit reports to CH2M HILL within 24 hours. Additionally, all incidents must be reported to the HSM and Honeywell HSPM immediately so we can meet Honeywell's incident reporting requirements.

Refer to CH2M HILL HSE SOP-215, Contracts, Subcontracts, and HSE Management Practices, for additional information.

3.4 Third Parties

The table(s) below list the name of each third party, the third party safety representative, and a description of the third party activities being performed at the site which have the potential to impact CH2M HILL's activities.

Third Party	USEPA designated oversight contractor
Third Party Safety Rep	TBD
Third Party Onsite Tasks	Project Oversight

This HS&E Plan does not cover parties who do not have a contractual relationship with CH2M HILL. CH2M HILL is not responsible for the health and safety or means and methods of a third party's work, and we must never assume such responsibility through our actions (e.g., advising on HS&E issues). In addition to this plan, CH2M HILL staff should review third parties' safety plans so that we remain aware of appropriate precautions that apply to us. Except in unusual situations when conducted by the HSM, CH2M HILL must never comment on or approve a third party's safety procedures. Self-assessment checklists, provided in Attachment 5, are to be used by the SC to review the third party's performance ONLY as it pertains to evaluating CH2M HILL employee and subcontractor exposure and safety.

HS&E related communications with third parties should be conducted as follows:

- Request the third party to brief CH2M HILL employees and subcontractors on the precautions related to the contractor's work.
- When an apparent third party's non-compliant or unsafe condition or practice poses a risk to CH2M HILL employees or subcontractors:
  - Notify the third party's safety representative
  - Request that the third party determine and implement corrective actions
  - If needed, stop affected CH2M HILL work until the third party corrects the condition or practice. Notify the client, Project Manager, and HSM as appropriate.
- If apparent third party's non-compliant or unsafe conditions or practices are observed, inform the third party's safety representative. CH2M HILL's obligation is limited strictly to informing the third party of the observation – the third party is solely responsible for determining and implementing necessary controls and corrective actions.
- If an apparent imminent danger is observed, immediately warn the third party's employee(s) in danger and notify the third party's safety representative. CH2M HILL's obligation is limited strictly to immediately warning the affected individual(s) and informing the third party of our observation – the third party is solely responsible for determining and implementing necessary controls and corrective actions.
- Document all verbal HS&E related communications in project field logbook, daily reports, or other records.

Refer to CH2M HILL HSE SOP-215, Contracts, Subcontracts, and HSE Management Practices, for additional information.

4.0 Personal Protective Equipment

The PPE hazard assessment performed by the HSM requires the following PPE for use during site activities. The PPE required by the table will be evaluated periodically by the SC to ensure the adequacy based on air monitoring results or changes to expected site conditions. The SC shall coordinate all changes with the HSM.

Refer to CH2M HILL HSE SOP-117, Personal Protective Equipment, and SOP-121, Respiratory Protection, for additional information.

4.1 PPE Specifications

PPE requirements for the project are summarized in Table 4-1.

TABLE 4-1
PPE Specifications [a]

Task	Level	Body	Head	Respirator [b]
All site tasks except those listed in Modified D	D	Work clothes; steel-toe, leather work boots; work gloves.	Hardhat [c] Safety glasses Ear protection [d] Traffic Vest	None required
Contaminated soil excavation or exposure;	Modified D	Coveralls: Uncoated Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat [c] Splash shield [c] Traffic vest Safety glasses Ear protection [d]	None required
Not anticipated or authorized	C	Coveralls: Polycoated Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat [c] Splash shield [c] Ear protection [d] Spectacle inserts	APR, full face, with P100/organic vapor combo cartridges.
Not anticipated or authorized	B	Coveralls: Polycoated Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat [c] Splash shield [c] Ear protection [d] Spectacle inserts	Pressure demand supplied air respirator with escape bottle or Pressure demand SCBA

Notes:
[a] CH2M HILL will provide PPE only to CH2M HILL employees.
[b] No facial hair that would interfere with respirator fit is permitted.
[c] Hardhat and splash-shield areas are to be determined by the SC.
[d] Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.
[e] Cartridge change-out schedule will be established by the HSM and at a minimum shall be at least every 8 hours (or one work day), except if relative humidity is > 85%, or if organic vapor measurements are > midpoint of Level C range (refer to Section 5)--then at least every 4 hours. If encountered conditions are different than those anticipated in this HS&E Plan, contact the HSM.

4.2 Reasons for Changing Level of Protection

Reasons for upgrading or downgrading the level of PPE are provided below.

4.2.1 Upgrade

Potential reasons for upgrading PPE level are listed below. *Note: Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SC qualified at that level is present.*

- Request from individual performing tasks.
- Change in work tasks that will increase contact or potential contact with hazardous materials.
- Occurrence or likely occurrence of gas or vapor emission.
- Known or suspected presence of dermal hazards.
- Instrument action levels (Section 5) exceeded.

4.2.2 Downgrade

Potential reasons for downgrading PPE level are listed below.

- New information indicating that situation is less hazardous than originally thought.
- Change in site conditions that decreases the hazard.
- Change in work task that will reduce contact with hazardous materials.

5.0 Air Monitoring/Sampling

Air monitoring and sampling must be performed to verify that workers and residents are not be exposed to harmful levels of airborne contaminants.

Refer to CH2M HILL SOP HSE-207, *Exposure Assessment for Airborne Chemical Hazards,* for additional information

5.1 Air Monitoring Specifications

Air monitoring specifications are summarized in Table 5-1.

Table 5-1

Instrument	Tasks	Action Levels[a]		Frequency [b]	Calibration
Photoionization Detector: OVM with 10.6eV lamp or equivalent	All	ND-1 ppm – up to 10 ppm if benzene is zero If readings exceed 1 ppm, benzene monitoring shall commence	Level D	As needed, when unknown conditions are encountered	Daily
		10 – 100 ppm	Level C		
Colorimetric Tube: Drager or equivalent benzene specific 0.5/c (0.5 to 10 ppm range) with pre-tube, or equivalent	All	<0.5 - 1 ppm 1 - 10 ppm >10 ppm	Level D Level C Level B	As needed, when unknown conditions are encountered	Not applicable
***Dust Monitor:** Miniram model PDM-3 or equivalent	Excavation	0 – 2.5 mg/m^3	Level D	Initially and periodically during tasks	Zero Daily
		2.5 – 5 mg/m^3	Level D/ D modified		
		> 5 mg/m^3	Stop work, Increase engineering controls, re-evaluate		
Combustible Gas Indicator: MSA model 260 or 261 or equivalent	Excavation	0-10% LEL	No explosion hazard	Continuous during advancement of boring or trench	Daily
		10-25% LEL	Potential explosion hazard		
		>25% LEL	Explosion hazard; evacuate or vent		
Oxygen Meter: MSA model 260 or 261 or equivalent	Excavation	> 25%c O_2	Explosion hazard; evacuate or vent	Continuous during advancement of boring or trench	Daily
		20.9%[c] O_2	Normal O_2		
		< 19.5%[c] O_2	O_2 deficient; vent or use SCBA		

Table 5-1

Instrument	Tasks	Action Levels[a]		Frequency[b]	Calibration
Noise-Level : *Auditory	All	Conversations can be held at distances of 3 feet without shouting	No action required	Initially and periodically during task	NA
		Conversations cannot be held at a distances of 3 feet without shouting	Hearing protection required		

*Conducted by removal action subcontractor (Arrowhead)

[a] Action levels apply to sustained (3 minutes or longer) breathing-zone measurements above background.

[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SC; generally, every 5 to 15 minutes if acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3," "at surface/SB-2," etc.).

[c] Noise monitoring shall be used at the discretion of the SC.

5.2 Calibration

Instruments will be function tested in accordance with the respective manufacturer's instructions for proper instrument use and maintenance. The instrument vendor or the CH2M HILL warehouse staff will ensure equipment has been calibrated in accordance with manufacturer's specifications.

All direct reading instruments will be function tested daily by the SC using span gas, prior to performing work activities and after the completion of the daily activities.

5.3 Air Sampling

Perimeter air sampling for polychlorinated aromatic hydrocarbons (PAHs) and total particulate (dust) will be performed during upcoming removal action implementation activities.

Real time dust monitoring will be performed throughout the duration of field activities. This dust monitoring will consist of (1) continuous measurements at site boundaries (e.g. outside of the exclusion zone) and (2) real-time measurements at periodic intervals inside the exclusion zones and during high visible dust episodes. Real-time dust monitoring will also be performed at upwind and downwind location at the discretion of the HSM or SC. Action levels for dust are identified in Table 5-1.

Perimeter air samples will be collected at select locations throughout the removal action area. These locations will be selected to evaluate both ambient and downwind levels. The samples will be collected using high-volume sample pumps in accordance with EPA Method TO-13 (*PAH and semi-volatile organic compounds by High-Volume PUF sampling*). Up to four perimeter samples may be collected during each sampling event. At a minimum, one sample will be collected directly downwind, based on morning wind directions, at the outer perimeter of the work zone and one collected upwind. Additional samples may be

collected at the outer perimeter of the work zone in a crosswind location. The wind direction will be recorded by field staff on an hourly basis.

6.0 Decontamination

The SC must establish the specific decontamination procedures for the specific site tasks. The SC must monitor the decontamination procedures, and should modify any procedures found to be ineffective. The SC must ensure that procedures are established for disposing of materials generated on the site.

Refer to CH2M HILL HSE SOP-506, Decontamination, for additional information.

6.1 Decontamination Requirements

Possible decontamination procedures are provided in Section 6.1.

TABLE 6-1
Possible Decontamination Procedures

Personnel	Sample Equipment	Heavy Equipment
• Dry decontamination using brushes* • Boot wash/rinse • Glove wash/rinse • Outer-glove removal • Body-suit removal • Inner-glove removal • Respirator removal • Hand wash/rinse • Face wash/rinse • Shower • Disposal of PPE in municipal trash, or containment for disposal • Disposal of personnel rinse water to facility or sanitary sewer, or containment for offsite disposal	• Wash/rinse equipment • Solvent-rinse equipment • Contain solvent waste for offsite disposal	• Power wash • Steam clean • Dispose of equipment rinse water to facility or sanitary sewer, or contain for offsite disposal • Dry decontamination

* For contractors, visitors, and public, as needed

6.2 Diagram of Personnel Decontamination Line

Figure 6-1 illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SC to accommodate task-specific requirements. No eating, drinking, or smoking is permitted in contaminated areas or in exclusion and decontamination zones. The SC should establish areas for these activities.

6.3 Collection and Disposal of Decontamination Wastes

Contaminated materials, PPE, and fluids shall be managed according to waste management procedures specified in the project Work Plan. If no such guidance is available, please contact the ECC for additional information and procedures.

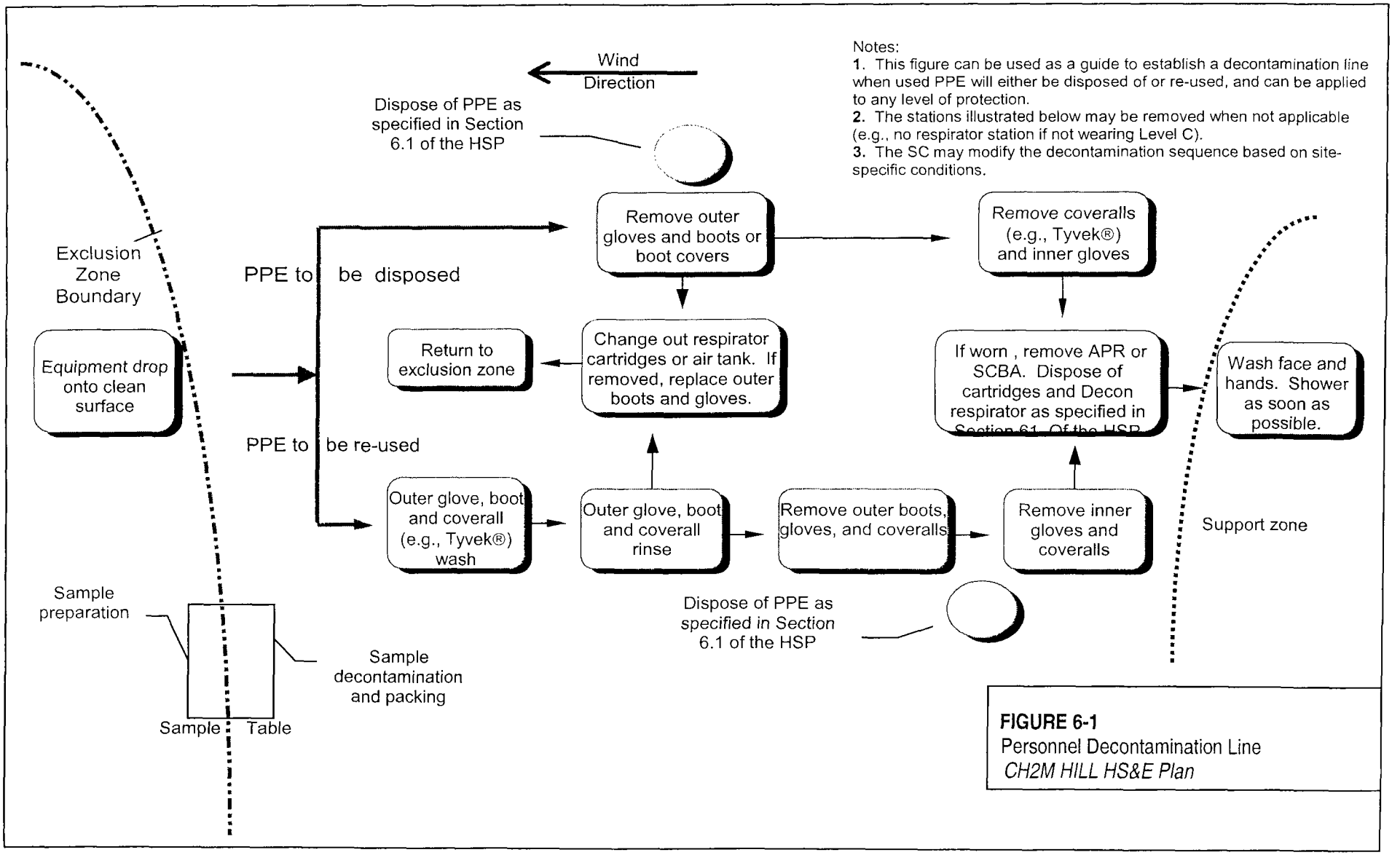


FIGURE 6-1
Personnel Decontamination Line
CH2M HILL HS&E Plan

7.0 Spill Containment and Notification

This section describes spill containment and notification requirements.

7.1 SPCC Regulated Facility

If the client facility is subject to a Spill Prevention, Control and Countermeasures (SPCC) Plan, a copy must be obtained and all spill prevention and response must conform to client SPCC requirements. If the client does not have an SPCC Plan and the project requires storage of more than 1,320 gallons of petroleum in 55-gallon containers or greater, a project-specific SPCC plan will be prepared.

7.2 Non-SPCC Regulated Facility

Projects not subject to SPCC requirements shall comply with this section. All onsite personnel shall be trained to follow the procedures described in this section.

7.2.1 Equipment

Field staff should obtain client approval for use of client-owned spill containment equipment. If client equipment is not available, the minimum spill equipment that shall be made available in the project's support zone is described in Table 7-1. Additional contaminant-specific spill response information may be included in the chemical MSDS.

TABLE 7-1
Minimum Spill Kit Equipment List

Spill Kit Contents
• Absorbent material (kitty litter or vermiculite)
• Neutralizers (for chemical spills)
• Sodium Carbonate (acid spills)
• Citric Acid (base spills)
• Absorbent socks and pads
• Safety Goggles
• Protective Gloves
• Tyvek Suit
• Waste Containers and Labels

7.2.2 Emergency Spill Event

The release of an unknown hazardous material is considered an emergency spill event. Implement the following procedures during an emergency spill event:

1. Evacuate the area and go upwind
2. Warn others and direct them upwind
3. Immediately contact the onsite Safety Coordinator who will contact the HSM for direction

7.2.3 Non-Emergency Spill Event

A non-emergency spill event includes incidental releases that do not pose a significant safety or health hazard where chemical hazards are known and CH2M HILL personnel can safely implement the following procedures as a first responder:

1. Stop the source of the spill
2. Contain the spill material. If there is a chance the spill will reach nearby drains or waterways, block them off to keep the spill away
3. Contact the onsite Safety Coordinator

7.2.4 Cleanup

Clean up the spilled material wearing the proper PPE identified in the HS&E Plan equipment table if the spilled material is less than 5 gallons and hazards are known. Spills larger than 5 gallons must be cleaned up by a qualified subcontractor since CH2M HILL personnel are not trained to implement OSHA spill response requirements. Dispose of spill debris according to the Waste Management Plan or as directed by the ECC.

7.2.5 Notification and Reporting

All spills are considered an "incident" and shall be reported internally according to procedures in HSE SOP-111, Incident Reporting and Investigation. Since many spills may require agency reporting within 24 hours, it is very important that internal notification occur immediately. The following summarizes required actions:

1. ***Immediately*** notify the onsite Safety Coordinator
2. SC notifies the HSM
3. HSM notifies the PM, who notifies the client
4. HSM notifies the Legal Department of a serious incident
5. HSM, ECC, and client shall determine if the incident is reportable to an agency

8.0 Site-Control Procedures

The following site control procedures shall be implemented at the site:

- The SC will conduct a site safety briefing before starting field activities or as tasks and site conditions change.
- Topics for the site safety briefing include general discussion of the HS&E plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, and emergencies.
- The SC will record attendance at safety briefings in a logbook and document the topics discussed.
- Establish support, decontamination, and exclusion zones. Delineate with flags or cones as appropriate. Support zone should be upwind of the site. Use access control at entry and exit from each work zone.
- Establish onsite communication consisting of the following:
  - Line-of-sight and hand signals
  - Air horn
  - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the "buddy system."
- Initial air monitoring shall be conducted by the SC using an appropriate level of PPE.
- The SC is to conduct periodic inspections of work practices to determine the effectiveness of this plan. Deficiencies are to be noted, reported to the HSM, and corrected.

Refer to CH2M HILL HSE SOP-510, Site Control, for additional information.

9.0 Hazwoper Compliance Plan

Certain parts of the site work are covered by state or federal Hazwoper standards and therefore require training and medical monitoring. Anticipated Hazwoper tasks (Section 1.3.1) might occur consecutively or concurrently with respect to non-Hazwoper tasks. This section outlines procedures to be followed when approved activities specified in Section 1.3.2 do not require 24- or 40-hour training. Non-Hazwoper-trained personnel also must be trained in accordance with all other state and federal OSHA requirements.

- In many cases, air sampling, in addition to real-time monitoring, must confirm that there is no exposure to gases or vapors before non-Hazwoper-trained personnel are allowed on the site, or while non-Hazwoper-trained staff are working in proximity to Hazwoper activities. Other data (e.g., soil) also must document that there is no potential for exposure. The HSM must approve the interpretation of these data. Refer to subsections 2.5 and 5.3 for contaminant data and air sampling requirements, respectively.
- When non-Hazwoper-trained personnel are at risk of exposure, the SC must post the exclusion zone and inform non-Hazwoper-trained personnel of the:
  - Nature of the existing contamination and its locations
  - Limitations of their access
  - Emergency action plan for the site
- Periodic air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-Hazwoper-trained personnel (e.g., in an adjacent area) are not exposed to airborne contaminants.
- When exposure is possible, non-Hazwoper-trained personnel must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.
- Procedures for remediation treatment system start-ups are as follows: Once a treatment system begins to pump and treat contaminated media, the site is, for the purposes of applying the Hazwoper standard, considered a treatment, storage, and disposal facility (TSDF). Therefore, once the system begins operation, only Hazwoper-trained personnel (minimum of 24 hour of training) will be permitted to enter the site. All non-Hazwoper-trained personnel must not enter the TSDF area of the site.

Refer to CH2M HILL HSE SOP-220, Site-Specific Written Safety Plans, for additional information.

10.0 Incident Reporting and Investigation

This section describes the notification and investigation requirements pertaining to a site incident. Refer to CH2M HILL HSE SOP-111, Incident Reporting and Investigation, for additional information.

10.1 Definitions

10.1.1 Incident

An incident is an undesired event that results or could have resulted in an injury, illness, damage to assets or environment harm. The following events shall be considered incidents:

- Injury or illness to a CH2M HILL employee or CH2M HILL subcontractor employee
- Injury or illness to a third party that was caused by a CH2M HILL activity
- Hazardous substance exposure
- Damage to property or equipment
- Motor vehicle accident
- Fire or explosion
- Spill or release
- Environmental issue permit violation
- A "near-miss"

10.1.2 Near-Miss

A near-miss occurs when an intervening factor prevented an injury, damage to property, or environmental harm from occurring. Examples of near-miss situations include: a hard hat or other PPE prevented an injury; secondary containment or emergency shutoff prevented a spill; or an alert co-worker prevented an accident. Near misses will typically be reported by the Safety Coordinator. All near miss incidents and reports must be reported and sent to the HSM as soon as practical, depending on the situation. If the HSM is not available, the Program Manager will be notified.

10.1.3 Serious Incidents

The HSM and Legal and Insurance Department (LID) shall determine if an event should be considered as a serious incident after reviewing the initial incident facts. The general criteria for serious incidents include:

- Intervention by external emergency response organizations
- Hospitalization
- Spills and releases of hazardous substances exceeding the reportable quantity (RQ)
- Potential violations of law or regulation
- Estimated property damage in excess of $10,000

10.2 Incident Notification and Communication

Injury Reporting

- If a CH2M HILL employee is injured immediately notify their group leader.
- Call the CH2M HILL Occupational Health Nurse

1-800-756-1130

- In case of emergency call 911.

Incident Notification and Reporting

- Upon any other project incident (fire, spill, , near miss, death, etc.), immediately notify the PM and HSM. Call emergency beeper number if HSM is unavailable.
- Notify and submit reports to client as required in contract.
- Serious Incidents must be reported in accordance with CH2M HILL Standard of Practice, *Serious Incident Reporting Process,* immediately. Serious incidents are those that involve any of the following:
  - Work related death, or life threatening injury or illness of a CH2M HILL employee, subcontractor, or member of the public
  - Kidnap/missing person
  - Acts or threats of terrorism
  - Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $ 500,000 in damage.

Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment

All CH2M HILL and subcontractors' employees shall immediately report any incident in which they are involved to their direct supervisor, and the supervisor shall inform the CH2M HILL SC. The SC shall then contact the PM, HSM, and the Honeywell HSPM immediately. Immediate reporting is critical because there are certain types of incidents that must be reported to Honeywell within hours of occurrence. The Honeywell HSPM will help the team determine what needs to be reported to Honeywell, how quickly it needs to be reported to Honeywell, and who at Honeywell (local, corporate, etc) needs to be notified.

Incident communications regarding serious incidents (regardless of the party involved) shall be considered sensitive in nature and must be controlled in a confidential manner. Internal communications regarding a serious incident may be conducted with affected project, regional, and Business Group staff but must be kept to a minimum. Communication should be oral whenever possible. If e-mail communications are necessary they shall be sent as confidential emails following the procedure provided in section 6.2.2 of CH2M HILL HSE SOP-111, Incident Reporting and Investigation. A LID representative shall direct all internal and external communications, including internal incident reporting, agency reporting, client notification, and incident investigations.

The PM or the HSPM will be responsible to ensure that the incident is entered into Honeywell's event tracking system and an IRF is completed within 24 hours of any incident. The HSPM can assist with complying with entering information into Honeywell's event tracking system. CH2M HILL's requirements can be met by entering an electronic IRF directly into the IRF database. The electronic IRF is found on the CH2M HILL HS&E web page under Tools and Forms>Electronic Tools and Forms. If unable to submit an IRF electronically, the SC shall complete the hardcopy IRF provided in Attachment 12 and fax

the IRF to the human resources representative (for CH2M HILL employee injuries), the PM, or the HSM (for all other incidents) for database entry. A copy of the hard-copy form should also be sent to the Honeywell HSPM. **An IRF for a serious incident shall not be initiated until directed by a representative of the LID.**

When additional or updated information becomes available that was not included in the original IRF the PM shall forward such information to the human resources representative (for CH2M HILL employee injuries) or the HSM (for all other incidents) so that the IRF may be updated. Updates to IRF reports should also be sent to the Honeywell HSPM.

CH2M HILL staff shall comply with all applicable statutory incident reporting requirements such as those required by Federal agencies (EPA, OSHA, etc) and local authorities (police).

10.3 Incident Investigation

Incident investigations are to be initiated and completed as soon as possible, but no later than 72 hours after the incident has occurred. The level and type of investigation will be determined by Honeywell and/or the Honeywell HSPM. **All serious incidents shall be investigated as directed by a representative of the LID.** The HSM/ECC may conduct the investigation directly or may delegate this function to the SC or other party, depending on the extent of the incident and staff availability.

The Incident Investigation Guideline provided in Attachment 12 shall be followed when documenting an investigation. Typically, minor incident investigations will be completed by the HSM/ECC by including the investigation facts in the IRF. The HSM/ECC may require completion of a separate investigation report or the Root Cause Analysis Form for more extensive investigations. The HSM/ECC shall ensure that the PM and SC are made aware of investigation findings and all corrective actions, and shall verify that corrective actions are implemented to prevent further incidents.

10.4 Corrective Actions

All corrective actions recommended from the incident investigation report shall be taken to prevent recurrence of the incident. The PM or SC should hold a review meeting to discuss the incident and the corrective actions. The responsible supervisors shall be assigned to carry out the corrective actions and shall inform the SC upon successful implementation of all corrective actions.

11.0 Emergency Preparedness

An emergency may be an injury to a worker, an explosion, evacuation, fire, or chemical release. Employees must know what to do if an emergency occurs. This requires pre-planning and communication of these plans to employees.

Refer to CH2M HILL HSE SOP-106, Emergency Planning, for additional information.

11.1 Pre-Emergency Planning

The SC shall perform the following pre-emergency planning tasks before starting field activities and coordinate emergency response with CH2M HILL onsite parties, the facility, and local emergency-service providers as appropriate.

- Coordinate with property owner and/or review the facility emergency and contingency plans where applicable. Have a copy readily available at the site for review and attach a copy to this HS&E Plan.
- Complete and post the Emergency Contacts form provided in the front matter of this document. The SC should confirm that all information provided on the Emergency Contacts form is accurate and appropriately updated.
- Confirm and post evacuation routes, assembly areas and route to hospital.
- Determine what onsite communication equipment is available (e.g., two-way radio, air horn)
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone)
- Communicate emergency procedures to all field staff prior to field activities.
- Post "Exit" signs above exit doors and post "Fire Extinguisher" signs above locations of extinguishers in field trailers.
- Keep areas near exits and extinguishers free of obstructions.
- Designate one vehicle as the emergency vehicle, place hospital directions and map inside, and keep keys in ignition during field activities
- Where appropriate and acceptable to the client, inform emergency room and external emergency response organizations of anticipated types of site emergencies.
- Rehearse the emergency response plan before site activities begin, including driving the route to the hospital.
- Emergency drills should be performed periodically, but at least once per year. Upon completion of each drill, the SC shall evaluate the effectiveness of the emergency plan.

Any problems or concerns identified during the evaluation must be corrected immediately.

11.2 Emergency Equipment and Supplies

The SC shall verify that appropriate emergency equipment and supplies are available, as needed, and in proper working order and mark the locations of the equipment on the site map when a map is provided. The following equipment and supplies are typically required:

- Fire Extinguishers
- First aid kit
- Bloodborne pathogen kit
- Personal eye wash station
- Potable water

11.3 Incident Response

The following actions shall be taken in the event of a fire, explosion, or chemical release:

- Shut down CH2M HILL operations and evacuate the immediate area
- Notify appropriate response personnel
- Account for personnel at the designated assembly area(s)
- Assess the need for site evacuation, and evacuate the site as warranted

11.4 Evacuation Procedures

Typical evacuation procedures include the following:

- Evacuation routes and assembly areas will be designated by the SC before work begins
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation
- The SC and a "buddy" will remain on the site after the site has been evacuated (if safe) to inform local responders of the nature and location of the incident
- The SC will account for all personnel at the assembly area
- The SC will write up a report as soon as possible after the emergency the following the guidelines provided in the Incident Report Section of the HS&E Plan.

11.5 Emergency Medical Treatment

The following actions shall be taken in the event of a medical emergency:

- Get medical attention immediately.
- Notify appropriate emergency response authorities listed on the Emergency Contacts form, as necessary.
- Prevent further injury.
- Initiate first aid and CPR where feasible.
- Make certain that the injured person is accompanied to the emergency room.

The SC will assume control during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room. If the injured is a CH2M HILL employee, the SC or PM must accompany the injured CH2M HILL employee to the emergency room and to any follow-up appointments until the injured is released to full duty.

If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CH2M HILL medical consultant. When contacting the medical consultant, state that the situation is a CH2M HILL matter, and give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.

The SC shall ensure that all injuries are reported according to the guidelines in the Incident Reporting and Investigation Section of this HS&E Plan.

12.0 Recordkeeping

The following records (see Table 12-1) shall be maintained as indicated. Refer to CH2M HILL SOP HSE-15 for complete recordkeeping requirements and additional information.

TABLE 12-1
Recordkeeping Requirements

Record	Location	Duration
Medical and Exposure Records	Medical & Training Administrator	Employment + 30 years
HS&E Plans	Project File; MTA	Project duration + 5 years
HS&E Training Records	Project File; HandS Database	Employment + 30 years
Environmental Documentation (permits, approvals, manifests)	Project File; HS&E Archive	Project duration + 5 years

Attachment 1
Employee Signoff Form

CH2MHILL

EMPLOYEE SIGNOFF FORM

Health, Safety and Environment Plan

The CH2M HILL project employees and subcontractors listed below have been provided with a copy of this HS&E Plan, have read and understood it, and agree to abide by its provisions.

Project Name: Celotex, Remedial Construction Chicago, Illinois **Project Number:** 327757

EMPLOYEE NAME (Please print)	EMPLOYEE SIGNATURE	COMPANY	DATE

Attachment 2
Job Hazard Analysis

Activity:	**Date:**
	Project:
Description of the work:	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)

Equipment to be used (List equipment to be used in the work activity)	**Inspection Requirements** (List inspection requirements for the work activity)	**Training Requirements** (List training requirements including hazard communication)

	PRINT NAME	SIGNATURE	
Supervisor Name:			Date/Time:
Safety Officer Name:			Date/Time:
Employee Name(s):			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:

Attachment 3
Daily Tailgate Safety Briefing Form

CH2M HILL
Daily Tailgate Safety Briefing Form

Project Name:	Project Number:	
Date:	Start Time:	Completed Time:
Site Location:		
Type of Work (general):		

Safety Issues

Tasks (this shift):
PPE Requirements:
Chemical Hazards:
Air Monitoring Requirements:
Physical Hazards:
Control Measures:
Hazard Communication Overview (MSDSs):
Special Topics (i.e., incidents, near misses, etc.)

Daily Checklist

HSE Plan up to date and present onsite?	Yes	No
Air monitoring equipment present, working, and calibrated?	Yes	No
Personnel training current?	Yes	No
Hospital Route Map and Emergency Phone Numbers posted onsite?	Yes	No
PPE present and worn by personnel?	Yes	No
Comments:		

Attendees

Print Name	Sign Name
Meeting conducted by:	

Attachment 4
Pre-Task Safety Plan

CH2MHILL

Pre-Task Safety Plan (PTSP)

Project: _____ Location: _____ Date: _____

Supervisor: _____ Job Activity: _____

_____

Task Personnel:

_____

_____

_____

_____

List Tasks:

_____

_____

_____

_____

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

_____

_____

_____

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	__ Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
__ Thermal burns	__ Pinch points	__ Poisonous plants/insects
__ Electrical	__ Cuts/abrasions	__ Eye hazards/flying projectile
__ Weather conditions	__ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	__ Heat/cold stress
__ Noise	__ Elevated loads	__ Water/drowning hazard
__ Explosion/fire	__ Slips, trip and falls	__ Heavy equipment
__ Radiation	__ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition

Other Potential Hazards (Describe):

_____

_____

_____

_____

CH2MHILL

Hazard Control Measures (Check All That Apply):			
PPE __ Thermal/lined __ Eye __ Dermal/hand __ Hearing __ Respiratory __ Reflective vests __ Flotation device	Protective Systems __ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections	Fire Protection __ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	Electrical __ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected
Fall Protection __ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	Air Monitoring __ PID/FID __ Detector tubes __ Radiation __ Personnel sampling __ LEL/O2 __ Other	Proper Equipment __ Aerial lift/ladders/scaffolds __ Forklift/heavy equipment __ Backup alarms __ Hand/power tools __ Crane with current inspection __ Proper rigging __ Operator qualified	Welding & Cutting __ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in CSE __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry __ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	Medical/ER __ First-aid kit __ Eye wash __ FA-CPR trained personnel __ Route to hospital	Heat/Cold Stress __ Work/rest regime __ Rest area __ Liquids available __ Monitoring __ Training	Vehicle/Traffic __ Traffic control __ Barricades __ Flags __ Signs
Permits __ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	Demolition __ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	Inspections: __ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __ Cranes and rigging	Training: __ Hazwaste __ Construction __ Competent person __ Task-specific (THA) __ Hazcom
Field Notes:_____			

Name (Print): _____

Signature:_____ Date:_____

Attachment 5
Project Activity Self-Assessment Checklists

CH2MHILL

HS&E Self-Assessment Checklist – EXCAVATIONS

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: (1) CH2M HILL employees enter excavations (complete Sections 1 and 3), and/or (2) CH2M HILL oversight of an excavation subcontractor is required (complete entire checklist).

SC may consult with excavation subcontractors when completing this checklist, but shall not direct the means and methods of excavation operations nor direct the details of corrective actions. Excavation subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Conditions considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazardous area until corrected.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposures to excavation hazards
☐ Evaluate a CH2M HILL subcontractor's compliance with excavation HS&E requirements
Subcontractor Name: _____

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the excavation subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-32.

SECTION 1	Yes	No	N/A	N/O
EXCAVATION ENTRY REQUIREMENTS (4.1)				
1. Personnel have completed excavation safety training	☐	☐	☐	☐
2. Competent person has completed daily inspection and has authorized entry	☐	☐	☐	☐
3. Personnel are aware of entry requirements established by competent person	☐	☐	☐	☐
4. Protective systems are free from damage and in stable condition	☐	☐	☐	☐
5. Surface objects/structures secured from falling into excavation	☐	☐	☐	☐
6. Potential hazardous atmospheres have been tested and found to be at safe levels	☐	☐	☐	☐
7. Precautions have been taken to prevent cave-in from water accumulation in the excavation	☐	☐	☐	☐
8. Personnel wearing appropriate PPE, per HSP/FSI	☐	☐	☐	☐

SECTION 2	Yes	No	N/A	N/O
GENERAL (4.2.1)				
9. Daily safety briefing/meeting conducted with personnel	☐	☐	☐	☐
10. Excavation and protective systems adequately inspected by competent person	☐	☐	☐	☐
11. Defective protective systems or other unsafe conditions corrected before entry	☐	☐	☐	☐
12. Guardrails provided on walkways over excavation 6' (1.8m) or deeper	☐	☐	☐	☐
13. Barriers provided at excavations 6' or deeper when excavation not readily visible	☐	☐	☐	☐
14. Barriers or covers provided for wells, pits, shafts, or similar excavation 6' (1.8 m) or deeper	☐	☐	☐	☐
15. Earthmoving equipment operated safely (use earthmoving equipment checklist in HS-27)	☐	☐	☐	☐
PRIOR TO EXCAVATING (4.2.2)				
16. Dig permit obtained where required by client/facility	☐	☐	☐	☐
17. Location of underground utilities and installations identified	☐	☐	☐	☐
18. Excavation area evaluated for OE/UXO hazards	☐	☐	☐	☐
19. Soils characterized prior to excavation where contamination may be present	☐	☐	☐	☐
20. USDA (or local equivalent) soil permit obtained for soil transport, where required	☐	☐	☐	☐
21. Excavation area checked for wetlands, endangered species, cultural/historic resources	☐	☐	☐	☐
22. ACOE/CWA 404 (or local equivalent) permit obtained for wetlands, where required	☐	☐	☐	☐
23. Stockpile management plan prepared	☐	☐	☐	☐
24. Waste discharge/NPDES (or local equivalent) permit obtained for excavation dewatering	☐	☐	☐	☐
25. Stormwater pollution prevention or erosion & sediment control plan prepared, where required)	☐	☐	☐	☐
EXCAVATING ACTIVITIES (4.2.3)				
26. Rocks, trees, and other unstable surface objects removed or supported	☐	☐	☐	☐
27. Exposed underground utility lines supported	☐	☐	☐	☐
28. Undermined surface structures supported or determined to be in safe condition	☐	☐	☐	☐
29. Warning system used to remind equipment operators of excavation edge	☐	☐	☐	☐
30. Stockpile, excavation covers, liners, silt fences in place, where required	☐	☐	☐	☐
31. Fugitive dust suppressed	☐	☐	☐	☐
EXCAVATION ENTRY (4.2.4)				
32. Trenches > 4' (1.2 m) deep provided with safe means of egress within 25' (7.6 m)	☐	☐	☐	☐
33. Structure ramps designed and approved by competent person	☐	☐	☐	☐
34. Potential hazardous atmospheres tested prior to entry	☐	☐	☐	☐
35. Rescue equipment provided where potential for hazardous atmospheres exists	☐	☐	☐	☐
36. Ventilation used to control hazardous atmospheres and air tested frequently	☐	☐	☐	☐
37. Appropriate respiratory protection used when ventilation does not control hazards	☐	☐	☐	☐
38. Precautions taken to prevent cave-in from water accumulation in excavation	☐	☐	☐	☐
39. Precautions taken to prevent surface water from entering excavation	☐	☐	☐	☐
40. Protection provided from falling/rolling material from excavation face	☐	☐	☐	☐
41. Spoil piles, equipment, materials restrained or kept at least 2' (61 cm) from excavation edge	☐	☐	☐	☐
EXCAVATION PROTECTIVE SYSTEMS (4.2.5)				
42. Protective systems used for excavations 5' (1.5 m) or deeper, unless stable rock	☐	☐	☐	☐
43. Protective systems for excavation deeper than 20' (6.1 m) designed by registered PE	☐	☐	☐	☐
44. If soil unclassified, maximum allowable slope is 34 degrees	☐	☐	☐	☐
45. Protective systems free from damage	☐	☐	☐	☐
46. Protective system used according to manufacturer's recommendations and not subjected to loads exceeding design limits	☐	☐	☐	☐
47. Protective system components securely connected to prevent movement or failure	☐	☐	☐	☐
48. Cave-in protection provided while entering/exiting shielding systems	☐	☐	☐	☐
49. Personnel removed from shielding systems when installed, removed, or vertical movement	☐	☐	☐	☐

SECTION 2 (Continued)	Yes	No	N/A	N/O
PROTECTIVE SYSTEM REMOVAL AND BACKFILLING (4.2.6)				
50. Protective system removal starts and progresses from excavation bottom	☐	☐	☐	☐
51. Protective systems removed slowly and cautiously	☐	☐	☐	☐
52. Temporary structure supports used if failure of remaining components observed	☐	☐	☐	☐
53. Backfilling taking place immediately after protective system removal	☐	☐	☐	☐
54. Backfill certified clean when required by client or local regulation	☐	☐	☐	☐
EXCAVATING AT HAZARDOUS WASTE SITES (4.2.7)				
55. Waste disposed of according to HSP and RCRA regulations	☐	☐	☐	☐
56. Appropriate decontamination procedures being followed, per HSP	☐	☐	☐	☐
EXCAVATING AT POTENTIAL ORDNANCE EXPLOSIVES SITES (4.2.8)				
57. OE plan prepared and approved	☐	☐	☐	☐
58. OE/UXO avoidance provided, routes and boundaries cleared and marked	☐	☐	☐	☐
59. Personnel remain inside the marked boundary	☐	☐	☐	☐
60. Earthmoving equipment does not excavate closer than 1' (30.5 cm) to anomalies	☐	☐	☐	☐

SECTION 3

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

CH2MHILL

H&S Self-Assessment Checklist – TRAFFIC CONTROL

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are exposed to traffic hazards and/or 2) CH2M HILL provides oversight of subcontractor personnel who are exposed to traffic hazards.

SSC or DSC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of traffic control operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies, and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposure to traffic hazards.
☐ Evaluate a CH2M HILL subcontractor's compliance with traffic control requirements.
Subcontractors Name: _____

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-24.

SECTION 1

SAFE WORK PRACTICES (3.1)	Yes	No	N/A	N/O
1. Personnel working on/adjacent to active roadways or in control zones are wearing safety vests.	☐	☐	☐	☐
2. Traffic control plan (TCP) is consistent with roadway, traffic, and working conditions.	☐	☐	☐	☐
3. TCP has been approved by regulatory or contractual authority prior to work.	☐	☐	☐	☐
4. TCP considers all factors that may influence traffic related hazards and controls.	☐	☐	☐	☐
5. Work areas are protected by rigid barriers.	☐	☐	☐	☐
6. Lookouts are used when applicable.	☐	☐	☐	☐
7. Vehicles are parked 40 feet away from work zone or are equipped with hazard beacon/strobe.	☐	☐	☐	☐
8. TMCC or TMA vehicle is used where appropriate.	☐	☐	☐	☐
9. All CH2M HILL traffic control devices conform to MUTCD standards.	☐	☐	☐	☐
10. Traffic control devices are inspected continuously.	☐	☐	☐	☐
11. Flagging is only used when other means of traffic control are inadequate.	☐	☐	☐	☐
12. Additional traffic control zone controls have been implemented.	☐	☐	☐	☐
13. Cranes do not swing loads/booms over nor do workers enter/cross live roadways (as defined).	☐	☐	☐	☐

SECTION 2	Yes	No	N/A	N/O
GENERAL (3.2.1)				
14. Lane closings are performed when required by this SOP.	☐	☐	☐	☐
15. Traffic control configurations are based on an engineering study of the location.	☐	☐	☐	☐
16. If no study, traffic control is performed with approval of the authority having jurisdiction.	☐	☐	☐	☐
17. TCP has been prepared and understood by all responsible parties prior to work.	☐	☐	☐	☐
18. Special preparation/coordination with external parties has been conducted where applicable.	☐	☐	☐	☐
19. All contractor traffic control devices conform to MUTCD standards.	☐	☐	☐	☐
20. Traffic movement and flow are inhibited or disrupted as little as possible.	☐	☐	☐	☐
21. Supplemental equipment and activities do not interfere with traffic.	☐	☐	☐	☐
22. Drivers and pedestrians are considered when entering and traversing traffic control zone.	☐	☐	☐	☐
TRAFFIC CONTROL ZONES (3.2.2)				
23. Traffic control zones are divided into the necessary five areas.	☐	☐	☐	☐
24. Advances warning area is designed based on conditions of speed, roadways, and driver needs.	☐	☐	☐	☐
25. Advanced warning signage is spaced according to roadway type and conditions.	☐	☐	☐	☐
26. Transition areas are used to channelize traffic around the work area.	☐	☐	☐	☐
27. Buffer areas are used to provide a margin of safety for traffic and workers.	☐	☐	☐	☐
28. The buffer area is free of equipment, workers, materials, and worker vehicles.	☐	☐	☐	☐
29. The length of the buffer area is two times the posted speed limit in feet.	☐	☐	☐	☐
30. All work is contained in the work area and is closed to all traffic.	☐	☐	☐	☐
31. A termination area is used to provide traffic to return to normal lanes.	☐	☐	☐	☐
32. A downstream taper is installed in the termination area.	☐	☐	☐	☐
DEVICE INSTALLATION AND REMOVAL (3.2.3)				
33. All vehicles involved with device installation/removal have hazard beacons/strobes.	☐	☐	☐	☐
34. Devices are installed according to the order established by this SOP.	☐	☐	☐	☐
35. Devices are removed in the opposite order of installation.	☐	☐	☐	☐
36. Tapers are used to move traffic out of its normal path.	☐	☐	☐	☐
37. Tapers are created using channelizing devices.	☐	☐	☐	☐
38. The length of taper is determined by posted speed and width of lane to be closed (see formula).	☐	☐	☐	☐
39. Local police or highway patrol assist during taper installation and removal.	☐	☐	☐	☐
40. TMCC/ TMA vehicles are used to protect personnel during installation and removal of devices.	☐	☐	☐	☐
41. Cone trucks are equipped with platforms and railings.	☐	☐	☐	☐
42. Cones are the appropriate height for the specific roadway and are reflectorized.	☐	☐	☐	☐
43. Temporary sign supports are secured using sandbags to prevent movement.	☐	☐	☐	☐
44. Arrow panels are used on lane closures where required.	☐	☐	☐	☐
45. Concrete barriers are used where required.	☐	☐	☐	☐
46. Barrels, crash cushions, or energy absorbing terminals are used to protect traffic as required.	☐	☐	☐	☐
47. Changeable message signs (CMS) are used as required.	☐	☐	☐	☐
48. CMS are not used to replace required signage.	☐	☐	☐	☐
49. No more than two message panels are used in any message cycle on CMS.	☐	☐	☐	☐
FLAGGING (3.2.4)				
50. Flagging is used only when other traffic control methods are inadequate.	☐	☐	☐	☐
51. Only approved personnel with current certification are allowed to be used as flaggers.	☐	☐	☐	☐
52. Flaggers are located off the traveled portion of the roadway.	☐	☐	☐	☐
53. A communication system is established when more than one flagger is used.	☐	☐	☐	☐
54. Hand signaling by flaggers is by means of red flags, sign paddles, or red lights.	☐	☐	☐	☐
55. Flaggers are alert, positioned close enough to warn work crews, and easily identified from crew.	☐	☐	☐	☐
56. An escape plan is established by crew and flaggers prior to traffic control set up.	☐	☐	☐	☐
57. Signs indicating a flagger is present are used and removed as required.	☐	☐	☐	☐

SECTION 2	Yes	No	N/A	N/O
INSPECTION AND MAINTENANCE (3.2.5)				
58. Traffic control zones are monitored to determine their effectiveness under varying conditions.	☐	☐	☐	☐
59. Traffic control devices are inspected at the beginning and continuously during work shift.	☐	☐	☐	☐
60. Traffic control devices are restored to their proper position immediately and continuously.	☐	☐	☐	☐
61. Damaged, old, or ineffective devices are removed and replace immediately and continuously.	☐	☐	☐	☐
62. Devices using reflected light for illumination are cleaned and monitored continuously.	☐	☐	☐	☐

SECTION 3

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

CH2MHILL

H&S Self-Assessment Checklist – HAND AND POWER TOOLS

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are exposed to hand and power tool hazards and/or 2) CH2M HILL provides oversight of subcontractor personnel who are exposed to hand and power tool hazards.

SSC or DSC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of hand and power tool use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposure to hand and power tool hazards.
☐ Evaluate a CH2M HILL subcontractor's compliance with hand and power tool requirements.
Subcontractors Name: _____

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-50.

SECTION 1

	Yes	No	N/A	N/O
SAFE WORK PRACTICES (3.1)				
1. All tools operated according to manufacturer's instructions and design limitations.	☐	☐	☐	☐
2. All hand and power tools maintained in a safe condition and inspected and tested before use.	☐	☐	☐	☐
3. Defective tools are tagged and removed from service until repaired.	☐	☐	☐	☐
4. PPE is selected and used according to tool-specific hazards anticipated.	☐	☐	☐	☐
5. Power tools are not carried or lowered by their cord or hose.	☐	☐	☐	☐
6. Tools are disconnected from energy sources when not in use, servicing, cleaning, etc.	☐	☐	☐	☐
7. Safety guards remain installed or are promptly replaced after repair.	☐	☐	☐	☐
8. Tools are stored properly.	☐	☐	☐	☐
9. Cordless tools and recharging units both conform to electrical standards and specifications.	☐	☐	☐	☐
10. Tools used in explosive environments are rated for such use.	☐	☐	☐	☐
11. Knife or blade hand tools are used with the proper precautions.	☐	☐	☐	☐
12. Consider controls to avoid muscular skeletal, repetitive motion, and cumulative trauma stressors.	☐	☐	☐	☐

H&S Self-Assessment Checklist – HAND AND POWER TOOLS

SECTION 2	Yes	No	N/A	N/O
GENERAL (3.2.1)				
13. PPE is selected and used according to tool-specific hazards anticipated.	☐	☐	☐	☐
14. Tools are tested daily to assure safety devices are operating properly.	☐	☐	☐	☐
15. Damaged tools are removed from service until repaired.	☐	☐	☐	☐
16. Power operated tools designed to accommodate guards have guards installed.	☐	☐	☐	☐
17. Rotating or moving parts on tools are properly guarded.	☐	☐	☐	☐
18. Machines designed for fixed locations are secured or anchored.	☐	☐	☐	☐
19. Floor and bench-mounted grinders are provided with properly positioned work rests.	☐	☐	☐	☐
20. Guards are provided at point of operation, nip points, rotating parts, etc.	☐	☐	☐	☐
21. Fluid used in hydraulic-powered tools is approved fire-resistant fluid.	☐	☐	☐	☐
ELECTRIC-POWERED TOOLS (3.2.2)				
22. Electric tools are approved double insulated or grounded and used according to SOP HS-23.	☐	☐	☐	☐
23. Electric cords are not used for hoisting or lowering tools.	☐	☐	☐	☐
24. Electric tools are used in damp/ wet locations are approved for such locations or GFCI installed.	☐	☐	☐	☐
25. Hand-held tools are equipped with appropriate on/off controls appropriate for the tool.	☐	☐	☐	☐
26. Portable, power-driven circular saws are equipped with proper guards.	☐	☐	☐	☐
ABRASIVE WHEEL TOOLS (3.2.3)				
27. All employees using abrasive wheel tools are wearing eye protection.	☐	☐	☐	☐
28. All grinding machines are supplied with sufficient power to maintain spindle speed.	☐	☐	☐	☐
29. Abrasive wheels are closely inspected and ring-tested before use.	☐	☐	☐	☐
30. Grinding wheels are properly installed.	☐	☐	☐	☐
31. Cup-type wheels for external grinding are protected by the proper guard or flanges.	☐	☐	☐	☐
32. Portable abrasive wheels used for internal grinding are protected by safety flanges.	☐	☐	☐	☐
33. Safety flanges are used only with wheels designed to fit the flanges.	☐	☐	☐	☐
34. Safety guards on abrasive wheel tools are mounted properly and of sufficient strength.	☐	☐	☐	☐
PNEUMATIC-POWERED TOOLS (3.2.4)				
35. Tools are secured to hoses or whip by positive means to prevent disconnection.	☐	☐	☐	☐
36. Safety clips or retainers are installed to prevent attachments being expelled.	☐	☐	☐	☐ 37.
Safety devices are installed on automatic fastener feed tools as required.	☐	☐	☐	☐
38. Compressed air is not used for cleaning unless reduced to < 30 psi, with PPE, and guarded.	☐	☐	☐	☐
39. Manufacturer's safe operating pressure for hoses, pipes, valves, etc. are not exceeded.	☐	☐	☐	☐
40. Hoses are not used for hoisting or lowering tools.	☐	☐	☐	☐
41. All hoses >1/2-inch diameter have safety device at source to reduce pressure upon hose failure.	☐	☐	☐	☐
42. Airless spray guns have required safety devices installed.	☐	☐	☐	☐
43. Blast cleaning nozzles are equipped with operating valves, which are held open manually.	☐	☐	☐	☐
44. Supports are provided for mounting nozzles when not in use.	☐	☐	☐	☐
45. Air receiver drains, handholes, and manholes are easily accessible.	☐	☐	☐	☐
46. Air receivers are equipped with drainpipes and valves for removal of accumulated oil and water.	☐	☐	☐	☐
47. Air receivers are completely drained at required intervals.	☐	☐	☐	☐
48. Air receivers are equipped with indicating pressure gauges.	☐	☐	☐	☐
49. Safety, indicating, and controlling devices are installed as required.	☐	☐	☐	☐
50. Safety valves are tested frequently and at regular intervals to assure good operating condition.	☐	☐	☐	☐

SECTION 2 (continued)

	Yes	No	N/A	N/O
LIQUID FUEL-POWERED TOOLS (3.2.5)				
51. Liquid fuel-powered tools are stopped when refueling, servicing, or maintaining.	☐	☐	☐	☐
52. Liquid fuels are stored, handled, and transported in accordance with SOP HS-21	☐	☐	☐	☐
53. Liquid fuel-powered tools are used in confined spaces in accordance with SOP HS-17.	☐	☐	☐	☐
54. Safe operating pressures of hoses, valves, pipes, filters, and other fittings are not exceeded.	☐	☐	☐	☐
POWDER-ACTUATED TOOLS (3.2.6)				
55. Only trained employee operates powder-actuated tools.	☐	☐	☐	☐
56. Powder-actuated tools are not loaded until just prior to intended firing time.	☐	☐	☐	☐
57. Tools are not pointed at any employee at any time.	☐	☐	☐	☐
58. Hands are kept clear of open barrel end.	☐	☐	☐	☐
59. Loaded tools are not left unattended.	☐	☐	☐	☐
60. Fasteners are not driven into very hard or brittle materials.	☐	☐	☐	☐
61. Fasteners are not driven into easily penetrated materials unless suitable backing is provided.	☐	☐	☐	☐
62. Fasteners are not driven into spalled areas.	☐	☐	☐	☐
63. Powder-actuated tools are not used in an explosive or flammable atmosphere.	☐	☐	☐	☐
64. All tools are used with correct shields, guards, or attachments recommended by manufacturer.	☐	☐	☐	☐
JACKING TOOLS (3.2.7)				
65. Rated capacities are legibly marked on jacks and not exceeded.	☐	☐	☐	☐
66. Jacks have a positive stop to prevent over-travel.	☐	☐	☐	☐
67. The base of jacks are blocked or cribbed to provide a firm foundation, when required.	☐	☐	☐	☐
68. Wood blocks are place between the cap and load to prevent slippage, when required.	☐	☐	☐	☐
69. After load is raised, it is cribbed, blocked, or otherwise secured immediately.	☐	☐	☐	☐
70. Antifreeze is used when hydraulic jacks are exposed to freezing temperatures.	☐	☐	☐	☐
71. All jacks are properly lubricated.	☐	☐	☐	☐
72. Jacks are inspected as required.	☐	☐	☐	☐
73. Repair or replacement parts are examined for possible defects.	☐	☐	☐	☐
74. Jacks not working properly are removed from service and repaired or replaced.	☐	☐	☐	☐
HAND TOOLS (3.2.8)				
75. Wrenches are not used when jaws are sprung to the point of slippage.	☐	☐	☐	☐
76. Impact tools are kept free of mushroomed heads.	☐	☐	☐	☐
77. Wooden handles of tools are kept free of splinters or cracks and are tightly fitted in tool.	☐	☐	☐	☐

SECTION 3

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

Attachment 6
Safe Work Observation Form

CH2MHILL

Safe Work Observation Form

Project:	Observer:	Date:
Position/Title of worker observed:	Background Information/ comments:	
Task/Observation Observed:		

- ❖ Identify and reinforce safe work practices/behaviors
- ❖ Identify and improve on at-risk practices/acts
- ❖ Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards
- ❖ Proactive PM support facilitates eliminating/reducing hazards (do you have what you need?)
- ❖ Positive, corrective, cooperative, collaborative feedback/recommendations

Actions & Behaviors	Safe	At-Risk	Observations/Comments
Current & accurate Pre-Task Planning/Briefing (Project safety plan, STAC, AHA, PTSP, tailgate briefing, etc., as needed)			**Positive Observations/Safe Work Practices:**
Properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			**Questionable Activity/Unsafe Condition Observed:**
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			
Focus/attentiveness			**Observer's Corrective Actions/Comments:**
Pace			
Uncomfortable/unsafe position			
Inconvenient/unsafe location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			
Repetitive motion			**Observed Worker's Corrective Actions/Comments:**
Other…			

Attachment 7
Project-Specific Chemical Product Hazard Communication Form

CH2MHILL

Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SSC shall verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained. **The SC will modify(add-delete) this form as site conditions warrant.**

Project Name: Celotex – Remedial Construction **Project Number:** 327757

MSDSs will be maintained at the following location(s): TBD by SC

Hazardous Chemical Products Inventory

Chemical	Quantity	Location	MSDS Available	Container labels	
				Identity	Hazard
Methane	1 liter, compressed	Support Zone			
Isobutylene	1 liter, compressed	Support Zone			
Pentane	1 liter, compressed	Support Zone			
Hydrochloric acid	< 500 ml	Support Zone / sample bottles			
Nitric acid	< 500 ml	Support Zone / sample bottles			
Sulfuric Acid	< 500 ml	Support Zone / sample bottles			
Sodium hydroxide	< 500 ml	Support Zone / sample bottles			
Methanol	< 1 Gallon	Support/Decon Zones			
Hexane	< 1 Gallon	Support/Decon Zones			
pH buffers	< 500 ml	Support Zone			
MSA Sanitizer	< 1 liter	Support/Decon Zones			
Alconox/Liquinox	< 1liter	Support/Decon Zones			

Refer to SOP HS-05 *Hazard Communication* for more detailed information.

Attachment 8
Applicable Material Safety Data Sheets

Attachment 9
Chemical-Specific Training Form

CH2MHILL

CHEMICAL-SPECIFIC TRAINING FORM

Location:	Project # :
HCC:	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC shall use the product MSDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and CH2M HILL's written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

Attachment 10
Biological Hazard Information

Tick-Borne Pathogens

There are six tick-borne pathogens that present a significant field hazard, and in some areas account for more than half of our serious field incidents. These procedures should be applied during any field activity where vegetation is present.

Hazard Control

The methods for controlling exposure to ticks include, in order of most-preferred to least:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acracide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene

Vaccinations are not available and preventative antibiotic treatment after a bite is generally not recommended.

Avoidance and Reduction of Ticks

To the extent practical, tick habitats should be avoided. In areas with significant tick infestation, consider stopping work and withdrawing from area until adequate tick population control can be achieved. Stopping and withdrawing should be considered as seriously as entering an area without proper energy control or with elevated airborne contaminants – tickborne pathogens present risk of serious illness!

In areas where significant population density or infestation exists, tick reduction should be considered. Tick reduction can be achieved by disrupting tick habitats and/or direct population reduction through the use of tick-toxic pesticides (Damminix, Dursban, Sevin, etc.).

Habitat disruption may include only simple vegetative maintenance such as removing leaf litter and trimming grass and brush. Tick populations can be reduced between 72 and 100% when leaf litter alone is removed. In more heavily infested areas, habitat disruption may include grubbing, tree trimming or removal, and pesticide application (Damminix, Dursban, Sevin, etc.). This approach is practical in smaller, localized areas or perimeter areas that require occasional access. Habitat controls are to be implemented with appropriate health and safety controls, in compliance with applicable environmental requirements, and may be best left to the property owner or tenant, or licensed pesticide vendor. Caution should be exercised when using chemical repellents or pesticides in or around areas where environmental or industrial media samples will be collected for analysis.

Personal Protection

After other prevention and controls are implemented, personal protection is still necessary in controlling exposure to ticks. Personal protection must include all of the following steps:

- So that ticks may be seen on your clothing wear light-colored clothing. Full-body New Tyvek (paper-like disposable coveralls) may also be used.
- To prevent ticks from getting underneath clothing tuck pant legs into socks or tape to boots.
- Wear long-sleeved shirts, a hat, and high boots.
- Apply DEET repellent to exposed skin or clothing per product label.

- Apply permethrin repellent to the outside of boots and clothing before wearing, per product label.
- Frequently check for ticks and remove from clothing.
- At the end of the day search your entire body for ticks (particularly groin, armpits, neck and head) and shower.
- To prevent pathogen transmission through mucous membranes or broken/cut skin, wash or disinfect hands and/or wear surgical-style nitrile gloves anytime ticks are handled.

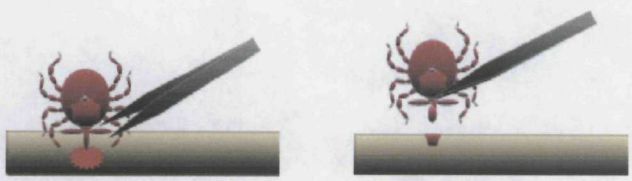
Pregnant individuals and individuals using prescription medications should consult with their physician and/or pharmacists before using chemical repellents. Because human health effects may not be fully known, use of chemical repellents should be kept to a minimum frequency and quantity. Always follow manufacturers' use instructions and precautions. Wash hands after handling, applying, or removing protective gear and clothing. Avoid hand-to-face contact, eating, drinking, smoking, etc. when applying or using repellents. Remove and wash clothes per repellent product label. Chemical repellents should not be used on infants and children.

Vaccinations are generally not available for tick-borne pathogens. Although production of the LYMErix™ lyme disease vaccination has been ceased, vaccination may still be considered under specific circumstances and with concurrence from the consulting physician. Preventative antibiotic treatment in non-ill individuals who have had a recent tick bite is recommended in specific cases only.

Tick Removal

1. Use fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.

2. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. (If this happens, remove mouthparts with tweezers. Consult your healthcare provider if infection occurs.)



3. Do not squeeze, crush, or puncture the body of the tick because its fluids (saliva, hemolymph, gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.

4. Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic animals with unprotected fingers. Children, elderly persons, and immunocompromised persons may be at greater risk of infection and should avoid this procedure.

5. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.

6. You may wish to save the tick for identification in case you become ill. Your doctor can use the information to assist in making an accurate diagnosis. Place the tick in a plastic bag and put it in your freezer. Write the date of the bite on a piece of paper with a pencil and place it in the bag.

Note: Folklore remedies such as petroleum jelly or hot matches do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided. In addition, a number of tick removal devices have been marketed, but none are better than a plain set of fine tipped tweezers.

First-Aid and Medical Treatment

Tick bites should always be treated with first-aid. Clean and wash hands and disinfect the bite site after removing embedded tick. Consult a healthcare professional if infection or symptoms and effects of tick-borne illnesses are develop.

Medical treatment for tick-borne infections include antibiotics and other medical interventions. Diagnosis of specific illness involves both clinical and laboratory confirmations. Preventative antibiotic treatment in non-ill individuals who have had a recent tick bite is recommended in specific cases only.

Previously infected individuals are not conferred immunity – re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

Hazard Recognition

An important step in controlling tick related hazards is understanding how to identify ticks, their habitats, their geographical locations, and signs & symptoms of tick-borne illnesses.

Tick Identification

There are five varieties of hard-bodied ticks that have been associated with tick-borne pathogens. These tick varieties include:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick
- Rocky Mountain Wood Tick

These varieties and their geographical locations are illustrated on the following page.

Tick Habitat

In eastern states, ticks are associated with deciduous forest and habitat containing leaf litter. Leaf litter provides a moist cover from wind, snow, and other elements. In the north-central states, is generally found in heavily wooded areas often surrounded by broad tracts of land cleared for agriculture. On the Pacific Coast, the bacteria are transmitted to humans by the western black-legged (deer) tick and habitats are more diverse. Here, ticks have been found in habitats with forest, north coastal scrub, high brush, and open grasslands. Coastal tick populations thrive in areas of high rainfall, but ticks are also found at inland locations.

Deer Tick

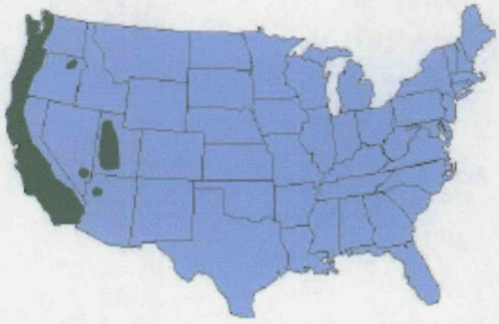
From Left: adult female, adult male, nymph, and larvae Deer Tick (cm scale)

Lone Star Tick

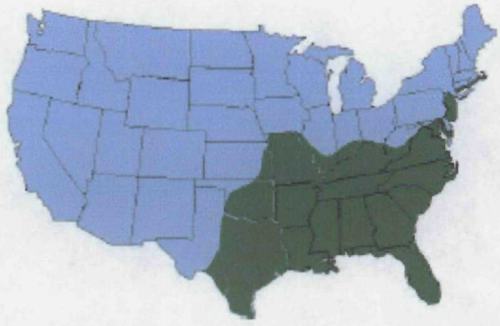
Dog Tick

Rocky Mountain Wood Tick

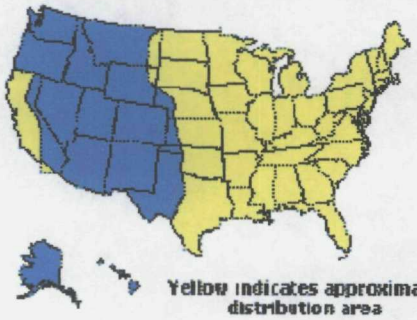
Distribution of Deer Tick (dark green)

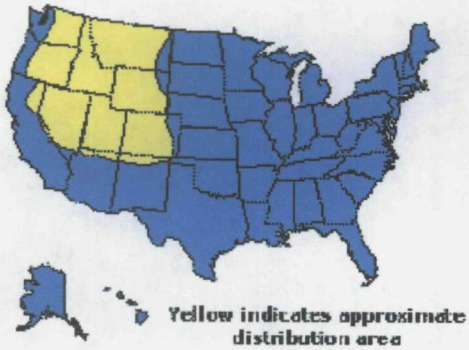


Distribution of Pacific Deer Tick (dark green)



Distribution of Lone Star Tick (Green)





Illnesses and Signs & Symptoms

There are six notifiable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite – normally hours after attachment. The illnesses, presented in approximate order of most common to least, include:

- Lyme (bacteria)
- RMSF (bacteria)
- Ehrlichiosis (bacteria)
- STARI (Southern Tick-Associated Rash Illness) (bacteria)
- Tularemia (Rabbit Fever) (bacteria)
- Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all of the following signs & symptoms: fever, headache, muscle aches, stiff neck, joint aches, nausea, vomiting, abdominal pain, diarrhea, malaise, weakness, small solid, ring-like, or spotted rashes. The bite site may be red, swollen, or develop ulceration or lesions. A variety of long-term symptoms may result when untreated, including debilitating effects and death.

Poison Oak, Ivy and Sumac

Poison oak, ivy and sumac plants are the single most common cause of allergic skin reactions in the United States. They are caused by contact with urushiol (you-ROO-shee-ol), which is found in the sap of the plants. It is colorless or pale yellow oil that oozes from any cut or crushed part of the plant, including the roots, stems and leaves. The oil is active year round. Reaction to Poison Oak, Ivy, and Sumac ranges from no reaction to a severe "rhus" dermatitis. Rhus is the class of poisonous plants which includes poison oak, poison ivy, poison sumac, mango, and other urushiol containing plants. 3 of 4 people will develop dermatitis on contact with urushiol.

Contact with urushiol can occur in three ways: direct, indirect and airborne particles. Direct contact is touching the sap of the toxic plant, while indirect contact involves touching something which has urushiol on it, such as personal protective equipment (PPE), clothes, boots, field equipment, or any items that have come in contact with the plant (including your hands). Airborne urushiol particles, such as burning plants or spray from a weed whacker, may also contact the skin or be inhaled, causing internal inflammation.

The rash caused by urushiol can affect almost any part of the body, especially where the skin is thin, such as the face. The rash does not spread, although it may seem to when it breaks out in new areas. Actually, what happens is the urushiol absorbs more slowly into thicker skin, such as found on the forearms, legs and trunk.

Identification

Poison Oak

Poison oak shrubs are usually 12" to 30" high, or a tree-climbing vine, with triple leaflets and short, smooth hair underneath. A project site in Portland had 8' tall poison oak bushes. Early berries are fuzzy and white; later, dun-colored. Plants are red and dark green in Spring and Summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds

in Fall, but the plant loses its (yellowed, then brown) leaves in Winter, leaving toxic stems. All parts of the plant remain toxic throughout the seasons.

Poison Ivy

Poison ivy plants are frequently found around lakes and streams in the Midwestern and the Eastern parts of the United States and are commonly found growing along trails and roadsides. Poison ivy grows as a woody, ropelike vine that can grow along fences or up trees, a trailing shrub on the ground, or a free-standing shrub. It normally has three leaflets (groups of leaves all on the same small stem coming off the larger main stem), but may vary from groups of three to nine. Poison ivy leaves are green in the summer and red in the fall with yellow or green flowers and white berries.

Poison Sumac

Poison sumac plants grow in boggy areas, especially in the Southeastern United States. Typically, poison sumac grows as a rangy shrub up to 15 feet tall. The plants are found to have seven to 13 smooth-edged leaflets and can have glossy pale yellow or cream-colored berries.

Primary contamination from poison oak, ivy or sumac, results from contact with bruised or broken plant parts that release "toxicodendrol", an oily resin containing the toxic chemical "urushiol".

Poison Ivy

Poison Sumac

Poison Oak

Exposure

Contamination with poison oak, ivy or sumac can happen through several pathways. These include

- Direct skin contact with any part of the plant.
- Contact with clothing that has been contaminated
- Contact from removing shoes that have been contaminated. (your shoes are coated with oil)
- Sitting in a vehicle that has become contaminated
- Contact with any objects or tools that have become contaminated.

Exposure to poison oak, ivy or sumac often becomes an OSHA recordable illness. The dermatitis is so severe that many people seek medical care and get prescription cortisone creams or steroid shots to reduce the suffering caused by the itch. If exposed, refer to the CH2M HILL HSE&Q Injury and Illness Reporting brochure for proper action to take if contaminated.

Best Work Practices

If you must work on a site that has been identified to potentially contain poison oak, ivy or sumac, the following precautions are necessary:

Identify plants containing urushiol - The best way to prevent exposure is to recognize the plant and avoid working in areas where poison oak, ivy or sumac is present.

If you must work in areas with urushiol containing plants, contact you project manager and health and safety manager to determine the best procedures to prevent contamination.

Do not drive vehicles onto the site where it will come into contact with poison oak, ivy or sumac. Vehicles which need to work in the area, such as drill rigs or heavy equipment must be washed and decontaminated as soon as possible after leaving the site.

All tools used in the area, including those used to cut back the plants, surveying instruments used in the area, air monitoring equipment or other test apparatus must be decontaminated before they are placed back into the site vehicle. If on-site decontamination is not possible, use plastic to wrap any tools or equipment until they can be decontaminated. If working on or near the ground surface, place plastic on the ground to cover the grass and foliage.

Personal protective equipment (PPE), including tyvek coveralls, gloves, and boot covers must be worn. PPE and plastic used to cover the ground must be placed into separate plastic bags and sealed if they are not disposed immediately into a trash receptacle.

Shower as soon as possible to remove any potential contamination. Any body part with suspected or actual exposure should be washed with "Tecnu" or other product designed for removing urushiol. If you do not have Tecnu wash with cold water. Do not take a bath, as the oils can form and invisible film on top of the water and contaminate your entire body upon exiting the bath.

- Zanfel™ may also be used to treat exposed areas that are experiencing signs and symptoms of poison oak, ivy or sumac contamination. The CH2M HILL warehouses carry Zanfel™ products, which must be carried in First Aid Kits as deemed appropriate. Refer to the Zanfel™ information guide below for specific product and contact information.

- Use products such as IvyBlock™ to prevent poison oak, ivy and sumac contamination. IvyBlock™ is approved by the FDA to prevent the rash caused by poison oak, ivy and sumac.

If there is exposure use the following first aid procedures, or others you may find to alleviate the pain and itching.

Poison Oak, Ivy, and Sumac First Aid

Are there any of these problems?

- Swelling in the throat, tongue and/or lips
- A hard time breathing or swallowing
- Weakness, dizziness
- Bluish lips and mouth
- Unconsciousness

YES

Use emergency kit with adrenalin, if available, and Get Emergency Care.

NO

Do you have any of these problems?

- Skin that is very bright red.
- Pus.
- Rash that has spread to the mouth, eyes or genitals.
- Rash on large areas of the body or the face.

YES

Give first aid before seeing doctor:

- Take a hot shower (only after rash develops), put the rash area in hot water or pour hot water over it. Make sure the water is not too hot to burn the skin. The hot water causes itching at first, but brings relief later. Do not use soap.
- Take an over-the-counter antihistamine, such as Benadryl, as stated on the label.
- For weeping blisters:
- Mix 2 teaspoons of baking soda in 1 quarter (4 cups) of water.
- Dip squares of gauze in this mixture.
- Cover the blisters with the wet gauze for 10 minutes, four times a day. (Do not apply this to the eyes.)

NO

Urushiol Plant Facts

Urushiol Oil is Potent

- Only 1 nanogram (billionth of a gram) needed to cause rash
- Average is 100 nanograms for most people
- 1/4 ounce of urushiol is all that is needed to cause a rash in every person on earth
- 500 people could itch from the amount covering the head of a pin
- Specimens of urushiol several centuries old have found to cause dermatitis in sensitive people.
- 1 to 5 years is normal for urushiol oil to stay active on any surface including dead plants
- Derived from **urushi**, Japanese name for lacquer

Myth 	**Fact** 
Poison oak, ivy, and sumac are contagious	Rubbing the rashes won't spread poison ivy to other parts of your body (or to another person). You spread the rash only if **urushiol oil** -- the sticky, resinlike sugbstance that casues the rash -- has been left on your hands.
You can catch poison ivy simply by being near the plants	Direct contact is needed to release **urusiol oil**. Stay away from forest fires, direct burning, or anything else that can cause the oil to become airborne such as a lawnmower, trimmer, etc.
Leaves of three, let them be	Poison sumac has 7 to 13 leaves on a branch, although poison ivy and oak have 3 leaves per cluster
Do not worry about dead plants	**Urushiol** oil stays active on any surface, including dead plants, for up to 5 years.
Breaking the blisters releases **urushiol** oil that can spread	Not true. But your wounds can become infected and you may make the scarring worse. In very extreme cases, excessive fluid may need to be withdrawn by a doctor.

New Cream to Treat Exposure to Poison Plants

Exposure to poison oak, ivy and sumac can be uncomfortable, and in some cases the rash can become so severe that medical care is required. A new product is available Zanfel™ (www.zanfel.com) that helps prevent blistering and itching from becoming severe. If you are working in an area with poison oak, ivy or sumac, you can obtain this cream by contacting your regional Safety Program Assistants (SPAs):

SWR: Julie Yeager/SAC
NER: Lynn Bong/MKE
NWR: Donita O'Brien/SEA
SER: Vanessa Wheelus/GNV
CNR: Donita O'Brien/SEA

Please remember, the cream does not replace preventative measures, including:

- Avoiding contact with poison oak, ivy and sumac.
- Wearing Tyvek coveralls and gloves to prevent contact.
- Washing with Tecnu® (or a similar product) after potential exposure.
- Washing clothing and decontaminating equipment with an oil-cutting detergent.

More information about Zanfel (from Zanfel):

Zanfel™ is an effective wash for urushiol-induced contact dermatitis. Urushiol is the toxin known to cause the itching and rash associated with poison oak, ivy, sumac, poisonwood, and related plants. Zanfel works by surrounding urushiol and bonding with it, thereby enabling it to be rinsed away. Unlike some products that require use within 10-20 minutes of contact or that required continued use until the rash is gone (which can take up to 5 weeks), Zanfel offers relief at any stages of the reaction and often with only one wash. Individuals with particularly severe reactions may require additional washes. Most individuals experience relief from the itching within 30 seconds of application. The rash will begin to subside within hours if the reaction is mild to moderate. Severe and systemic cases will still require medical attention. Severe cases are defined as breakouts that are present on more than 15-percent of the body, and new breakouts continue to develop after day 4.

BROWN RECLUSE SPIDER

Its size - Adult brown recluse spiders have a leg span about the size of a quarter. Their body is about 3/8 inches long and about 3/16 inches wide. Males are slightly smaller in body length than females, but males have proportionally longer legs. Both sexes are venomous

Recluse spiders have been known to habitat most of the lower 48 states; however its typical range is shown on the attached map.

- If bitten stay calm, immediately apply ice to the bite and to try and collect the spider (said even a mangled part of the spider might help a professional with a diagnosis) and go to the ER.
- Shake out clothing and shoes before getting dressed.
- Inspect bedding and towels before use.
- Wear gloves when handling firewood, lumber, and rocks (be sure to inspect the gloves for spiders before putting them on).
- Remove bedskirts and storage boxes from underneath beds. Move the bed away from the wall.
- Exercise care when handling cardboard boxes (recluse spiders often are found in the space under folded cardboard flaps)

Attachment 11
Drug Testing Hospital Kit Notice

HOSPITAL KIT NOTICE

You are receiving this package because you are listed as a Project Manager and/or Superintendent/CM who is managing a CCI project or an INC project which requires drug testing. The items in the package, known as a 'hospital kit', are needed if there is a serious injury requiring medical care on your project.

It is your responsibility to make certain that this hospital kit is onsite at all times while construction is in progress.

For minor injuries - Hospital Kits are NOT required. After the injury is treated, the injured employee will be tested at the emergency care clinic or you can take the injured employee to the usual laboratory collection facility. Both the emergency care clinic and the laboratory collection facility already have drug testing kits and you will only be responsible to provide them with your normal Custody and Control Form (CCF) in order for the employee to be tested.

For more serious injuries that require hospital, ambulance, or paramedic care, we need to provide the collector with the 'hospital kit' in order for the drug test specimen to be properly collected. This package *contains everything that the medical provider will need* to collect the sample. It is critical that the 'hospital kit' accompanies all injured employee(s) to the hospital so they will get drug tested. If more than one employee is injured, you must send one kit for each employee that is to receive care at the hospital. After the kit is used, you must immediately contact Elaine Senecal/ORL to get a replacement kit. These kits must remain onsite and be available for emergencies at all times.

Location for CHI

Contact Elaine Senecal (407-423-0001 x240) for location nearest your project site location.

CH2M HILL Personnel also need on-line training:

http://www.int.ch2m.com/safety_counts/Training_Basic_Modules/Drug_desc.html

Attachment 12
Incident Report Form and
Root Cause Investigation Information

CH2MHILL

Incident Report Form (Hardcopy)

Fax completed form to:
425.462.5957
CH2M HILL Seattle Office
Attention: Corporate HS&E Department

Type of Incident (Select at least one)

- ☐ Injury/Illness
- ☐ Environmental/Permit Issue
- ☐ Property Damage
- ☐ Near Miss
- ☐ Spill/Release
- ☐ Other

General Information (Complete for all incident types)

Preparer's Name: _____ Preparer's Employee Number: _____
Date of Report: _____ Date of Incident: _____ Time of Incident: _____ am/pm

Type of Activity (Provide activity being performed that resulted in the incident)

- ☐ Asbestos Work
- ☐ Confined Space Entry
- ☐ Construction Mgmt- Haz Waste
- ☐ Construction Mgmt - Non-Haz Waste
- ☐ Demolition
- ☐ Drilling-Haz Waste
- ☐ Drilling-Non Haz Waste
- ☐ Drum Handling
- ☐ Electrical Work
- ☐ Excavation Trench-Haz Waste
- ☐ Excavation Trench-Non Haz
- ☐ Facility Walk Through
- ☐ General Office Work
- ☐ Keyboard Work
- ☐ Laboratory
- ☐ Lead Abatement
- ☐ Motor Vehicle Operation
- ☐ Moving Heavy Object
- ☐ Other (Specify) _____
- ☐ Process Safety Management
- ☐ Tunneling
- ☐ Welding
- ☐ Wetlands Survey
- ☐ Working from Heights
- ☐ Working in Roadways
- ☐ WWTP Operation

Location of Incident (Select one)

- ☐ Company Premises (CH2M HILL Office: _____)
- ☐ Field (Project #: _____ Project/Site Name: _____ Client: _____)
- ☐ In Transit (Traveling from: _____ Traveling to: _____)
- ☐ At Home

Geographic Location of Incident (Select region where the incident occurred)

- ☐ Northeast
- ☐ Southeast
- ☐ Northwest
- ☐ Southwest
- ☐ Corporate
- ☐ Canadian
- ☐ Asia Pacific
- ☐ Europe Middle East
- ☐ Latin America

If a CH2M HILL subcontractor was involved in the incident, provide their company name and phone number: _____

Describe the Incident (Provide a brief description of the incident): _____

_____

_____

Injured Employee Data (Complete for Injury/Illness incidents only)

If CH2M HILL employee injured

Employee Name: _____ Employee Number: _____

If CH2M HILL Subcontractor employee injured

Employee Name: _____ Company: _____

Injury Type

- ☐ Allergic Reaction
- ☐ Amputation
- ☐ Asphyxia
- ☐ Bruise/Contusion/Abrasion
- ☐ Burn (Chemical)
- ☐ Burn/Scald (Heat)
- ☐ Cancer
- ☐ Carpal Tunnel
- ☐ Concussion
- ☐ Cut/Laceration
- ☐ Dermatitis
- ☐ Dislocation
- ☐ Electric Shock
- ☐ Foreign Body in eye
- ☐ Fracture
- ☐ Freezing/Frost Bite
- ☐ Headache
- ☐ Hearing Loss
- ☐ Heat Exhaustion
- ☐ Hernia
- ☐ Infection
- ☐ Irritation to eye
- ☐ Ligament Damage
- ☐ Multiple (Specify)

_____

- ☐ Muscle Spasms
- ☐ Other (Specify)

_____

- ☐ Poisoning (Systemic)
- ☐ Puncture
- ☐ Radiation Effects
- ☐ Strain/Sprain
- ☐ Tendonitits
- ☐ Wrist Pain

Part of Body Injured

- ☐ Abdomen
- ☐ Ankle(s)
- ☐ Arms (Multiple)
- ☐ Back
- ☐ Blood
- ☐ Body System
- ☐ Buttocks
- ☐ Chest/Ribs
- ☐ Ear(s)
- ☐ Elbow(s)
- ☐ Eye(s)
- ☐ Face
- ☐ Finger(s)
- ☐ Foot/Feet
- ☐ Hand(s)
- ☐ Head
- ☐ Hip(s)
- ☐ Kidney
- ☐ Knee(s)
- ☐ Leg(s)
- ☐ Liver
- ☐ Lower (arms)
- ☐ Lower (legs)
- ☐ Lung
- ☐ Mind
- ☐ Multiple (Specify)

_____

- ☐ Neck
- ☐ Nervous System
- ☐ Nose
- ☐ Other (Specify)

_____

- ☐ Reproductive System
- ☐ Shoulder(s)
- ☐ Throat
- ☐ Toe(s)
- ☐ Upper Arm(s)
- ☐ Upper Leg(s)
- ☐ Wrist(s)

Nature of Injury

- ☐ Absorption
- ☐ Bite/Sting/Scratch
- ☐ Cardio-Vascular/Respiratory System Failure
- ☐ Caught In or Between
- ☐ Fall (From Elevation)
- ☐ Fall (Same Level)
- ☐ Ingestion
- ☐ Inhalation
- ☐ Lifting
- ☐ Mental Stress
- ☐ Motor Vehicle Accident
- ☐ Multiple (Specify)

_____

- ☐ Other (Specify)

_____

- ☐ Overexertion
- ☐ Repeated Motion/Pressure
- ☐ Rubbed/Abraded
- ☐ Shock
- ☐ Struck Against
- ☐ Struck By
- ☐ Work Place Violence

Initial Diagnosis/Treatment Date: _____

Type of Treatment

- ☐ Admission to hospital/medical facility
- ☐ Application of bandages
- ☐ Cold/Heat Compression/Multiple Treatment
- ☐ Cold/Heat Compression/One Treatment
- ☐ First Degree Burn Treatment
- ☐ Heat Therapy/Multiple treatment
- ☐ Multiple (Specify)

_____

- ☐ Heat Therapy/One Treatment
- ☐ Non-Prescriptive medicine
- ☐ None
- ☐ Observation
- ☐ Other (Specify)

_____

- ☐ Prescription- Multiple dose
- ☐ Prescription- Single dose
- ☐ Removal of foreign bodies
- ☐ Skin Removal
- ☐ Soaking therapy- Multiple Treatment
- ☐ Soaking Therapy- One Treatment
- ☐ Stitches/Sutures
- ☐ Tetanus
- ☐ Treatment for infection
- ☐ Treatment of 2nd /3rd degree burns
- ☐ Use of Antiseptics - multiple treatment
- ☐ Use of Antiseptics - single treatment
- ☐ Whirlpool bath therapy/multiple treatment
- ☐ Whirlpool therapy/single treatment
- ☐ X-rays negative
- ☐ X-rays positive/treatment of fracture

CH2MHILL

Number of days doctor required employee to be off work: _____
Number of days doctor restricted employee's work activity: _____
Equipment Malfunction : Yes ☐ No ☐ Activity was a Routine Task: Yes ☐ No ☐
Describe how you may have prevented this injury: _____
_____

Physician Information
Name: _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Hospital Information
Name: _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Property Damage (Complete for Property Damage incidents only)

Property Damaged: _____ Property Owner: _____
Damage Description: _____
Estimated Amount: $ _____

Spill or Release (Complete for Spill/Release incidents only)

Substance (attach MSDS): _____ Estimated Quantity: _____
Facility Name, Address, Phone No.: _____
Did the spill/release move off the property where work was performed?: _____
Spill/Release From: _____ Spill/Release To: _____

Environmental/Permit Issue (Complete for Environmental/Permit Issue incidents only)

Describe Environmental or Permit Issue: _____
Permit Type: _____
Permitted Level or Criteria (e.g., discharge limit): _____
Permit Name and Number (e.g., NPDES No. ST1234): _____
Substance and Estimated Quantity: _____
Duration of Permit Exceedence: _____

Verbal Notification (Complete for all incident types)(Provide names, dates and times)

CH2M HILL Personnel Notified: _____
Client Notified: _____

Witnesses (Complete for all incident types)

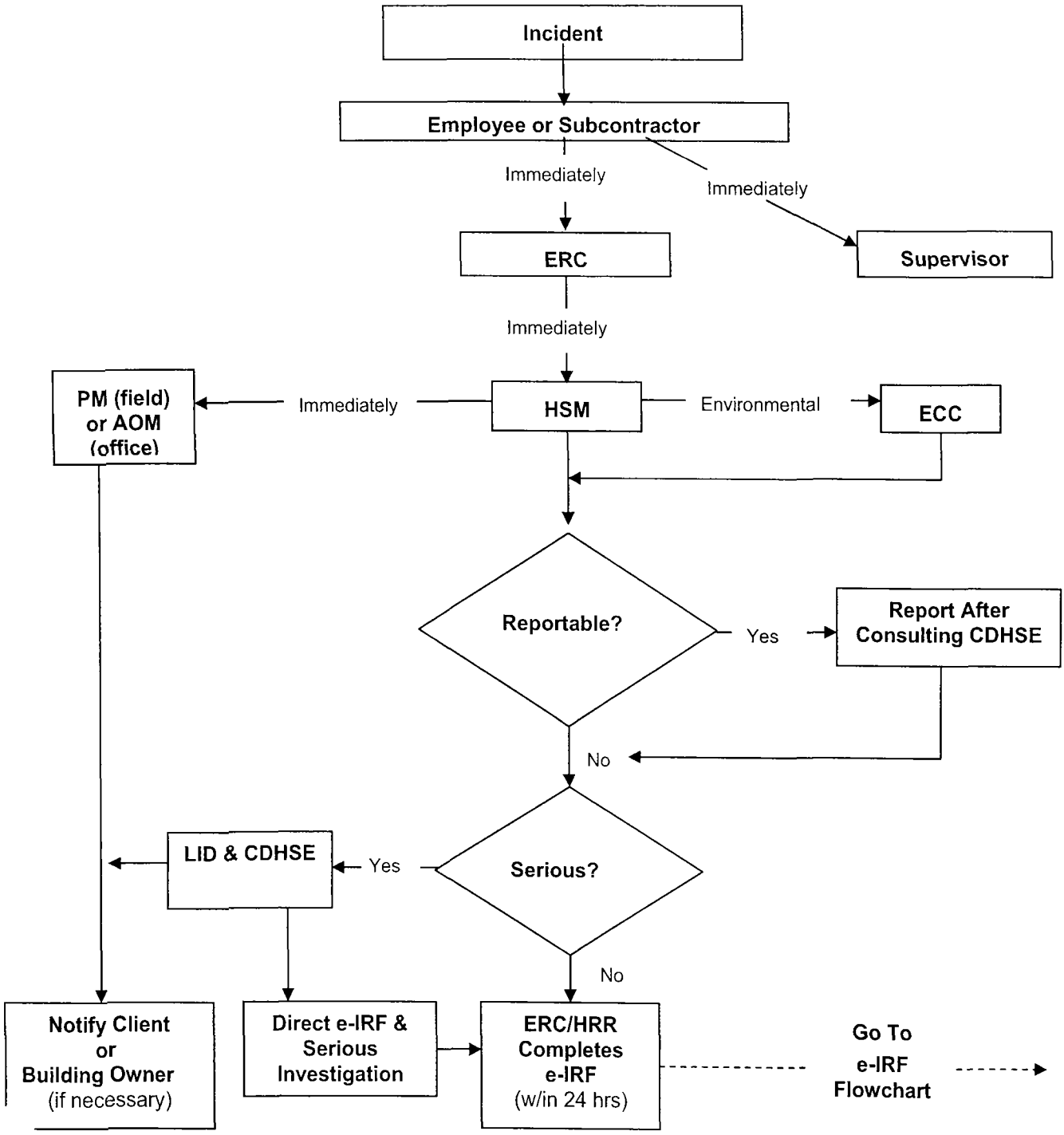
Witness Information (First Witness)
Name: _____
Employee Number (CH2M HILL): _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Employee Number (CH2M HILL: _____
Address: _____
City: _____
Zip Code: _____
Phone : _____

Additional Comments:
_____
_____

Witness Information (Second Witness)
Name: _____

Incident Notification and Reporting Flowchart



Investigation Guidelines

1.0 Introduction

This guideline is provided to assist in accessing, completing, and reviewing an incident investigation. It is important to remember the following when conducting an investigation:

- Gather relevant facts, focusing on fact finding, not fault finding.
- Draw conclusions, pitting facts together into a probable scenario.
- Determine incident root cause(s), which are basic causes on why an unsafe act/condition existed.
- Develop and implement solutions, matching all identified root causes with solutions.

2.0 Documentation

The following should be included in the IRF to document the incident.

Description

- Provide a description of the event and the sequence of events and actions that took place prior to the incident. Start with the incident event and work backwards in time through all of the preceding events that directly contributed to the incident. The information should identify why the event took place as well as who was involved, when and where the event took place, and what actions were taken.

Cause Analysis

Using the form and flowchart in Attachment 11-1, the root cause of the incident will be determined. This form must be retained in the project and/or regional HS&E files.

Immediate Causes—List the substandard actions or conditions that directly affected the incident. The following are examples of immediate causes:

> *Substandard Actions*: Operating equipment without authority; failure to warn; failure to secure; operating at improper speed; making safety device inoperable; using defective equipment; failing to use PPE; improper loading; improper lifting; improper position for task; under influence of alcohol or drugs; horseplay.
>
> *Substandard Conditions:* Exposure to hazardous materials; exposure to extreme temperatures; improper lighting; improper ventilation; congestion; exposure to fire and explosive hazard; defective tools, equipment, or materials; exposure to extreme noise; poor ventilation; poor visibility; poor housekeeping.

Basic Causes—List the personal and job factors that caused the incident. The following are examples of basic causes:

Personal Factors: Capability; knowledge; skill; stress; motivation.

Job Factors: Abuse or misuse; engineering; maintenance; purchasing; supervision; tools and equipment; wear and tear; work standards.

Corrective Action Plan

Include all corrective actions taken or those that should be taken to prevent recurrence of the incident. Include the specific actions to be taken, the employer and personnel responsible for implementing the actions, and a time frame for completion. Be sure the corrective actions address the causes. For example, training may prevent recurrence of an incident caused by a lack of knowledge, but it may not help an incident caused by improper motivation.

The following are examples of management programs that may be used to control future incidents. These programs should be considered when determining specific corrective actions.

Management Programs: Accident/incident analysis; emergency preparedness; engineering controls; general promotion; group meetings; health control; hiring and placement; leadership and administration; management training; organizational rules; personal protective equipment; planned inspections; program audits; program controls; purchasing controls; task analysis and procedures; task observation

3.0 Attachments

Attachment 12-1 Root Cause Analysis Form and Flowchart

CH2MHILL

Incident Reporting and Investigation
Standard of Practice HSE-111
Attachment 12-1: Investigation Guidelines

Root Cause Analysis Form and Flowchart

Root Cause Analysis Form

Root Cause Analysis (RCA)

Root Cause Categories (RCC): Select the RCC numbered below that applies for the root cause (RC) and/or contributing factor (CF) in the first column, then describe the specific root cause and corrective actions in each column.

1. Lack of skill or knowledge
2. Lack of or inadequate operational procedures or work standards
3. Inadequate communication of expectations regarding procedures or work standards
4. Inadequate tools or equipment
5. Correct way takes more time and/or requires more effort
6. Short-cutting standard procedures is positively reinforced or tolerated
7. Person thinks there is no personal benefit to always doing the job according to standards

RCC #	Root Cause(s)	Corrective Actions	RC[1]	CF[2]	Due Date	Completion Date	Date Verified

[1] RC = Root Cause; [2] CF = Contributing Factors (check which applies)

Investigation Team Members

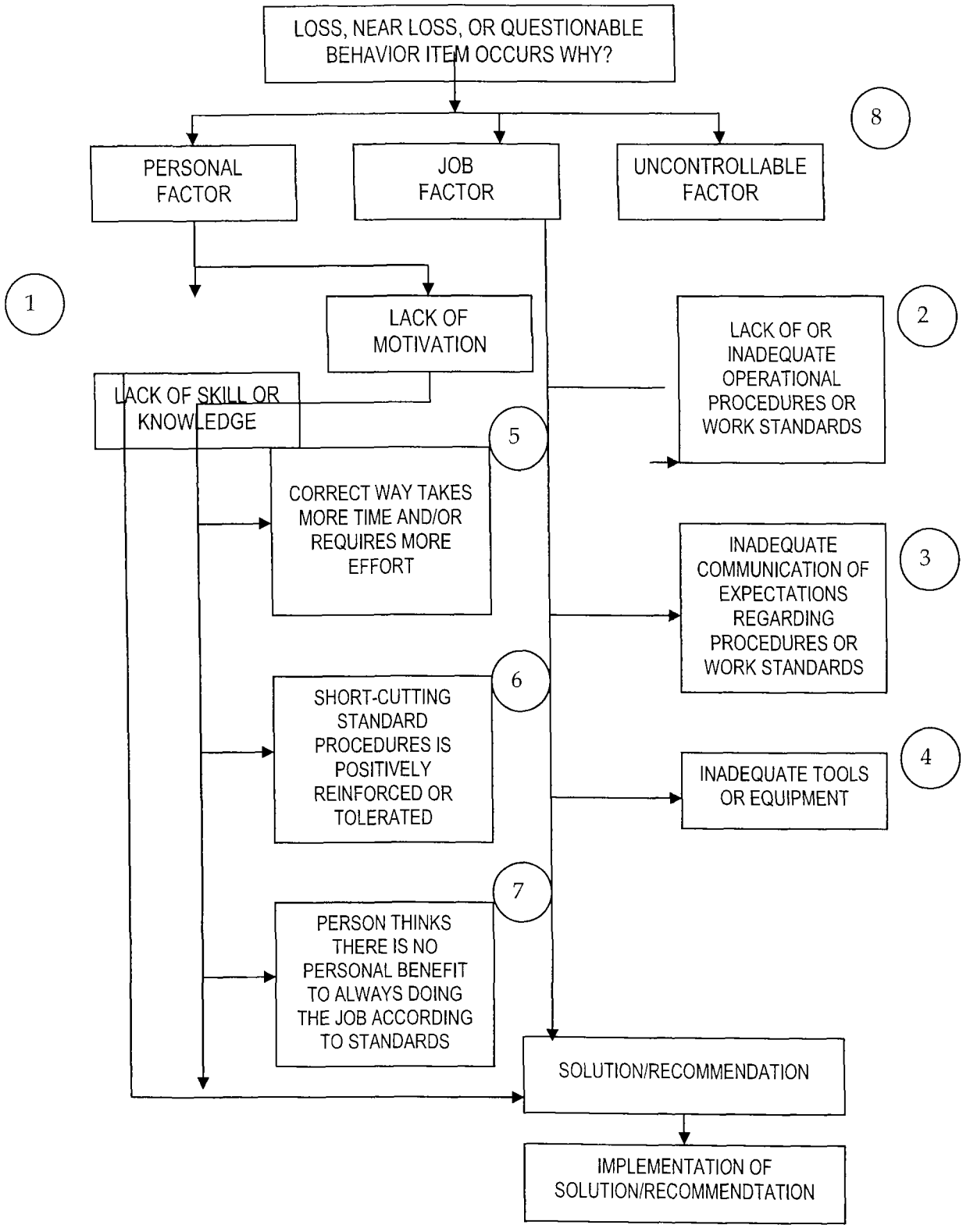
Name	Job Title	Date

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date

Root Cause Analysis Flowchart



Appendix C

APPENDIX C

Construction Quality Plan

Final

Construction Quality Plan

For Residential Properties Located Near the Former Celotex Site 2800 South Sacramento Avenue Chicago, Illinois 60623

Prepared for

Honeywell Celotex Project

June 2007

Prepared by

CH2MHILL
Constructors, Inc.

Construction Quality Plan

Construction Quality Plan

Submitted to

Honeywell Celotex Project

June 2007

Approved By:

Alan Jones, Project Manager	Date
Bob Cipolletti, Honeywell Program Quality Manager	Date

Contents

Figure

Appendix

Acronyms and Abbreviations

AHA	Activity Hazard Analysis
ASTM	American Society for Testing and Materials
CQP	Construction Quality Plan
DFOW	Definable Feature of Work
HSP	Health and Safety Plan
KA	Subcontracts Administrator
NTP	Notice To Proceed
PM	Project Manager
QA	Quality Assurance
QC	Quality Control
QMP	Quality Management Program
RFI	Request For Information
SOW	Statement of Work

1. Purpose

The purpose of this Construction Quality Plan (CQP) is to assure quality core standards are addressed and to provide detailed guidance to the project team for implementation of quality processes and procedures during construction operations required at the Honeywell Celotex residential remediation project located in Chicago, IL.

As a matter of corporate policy, CH2M HILL is committed to meeting our clients' needs and the regulations and standards of the engineering profession and construction industry. This quality commitment applies to all engineering, scientific, economic, design, and construction activities executed by CH2M HILL and its subcontractors.

Individuals performing work under this CQP are responsible for the quality of their work and for the implementation and adherence to applicable quality procedures consistent with the principles of continuous quality improvement.

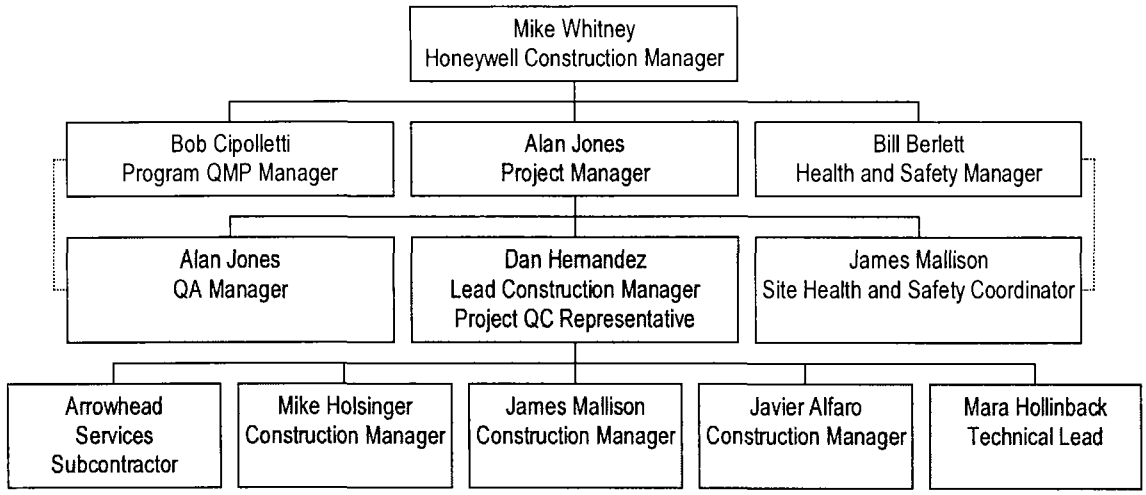
2. Quality Management Organization

2.1 Quality Management Organizational Chart

The figure below presents the quality management organizational chart for the Celotex project.

FIGURE 2.1

Quality Management Organization Chart



2.2 Quality Management Roles and Responsibilities

The overall responsibility for implementation and enforcement of the CQP is assigned to the Project Manager. Designated qualified individuals will assume execution responsibility of this CQP. These individuals include the Program QMP Manager, QA Manager, Project QC Representative, Health and Safety Manager, or other project personnel. The Program QMP Manager has quality assurance responsibility for verification of the effectiveness of the program and project quality control.

2.2.1 Quality Assurance (QA) Manager

The QA Manager is responsible for maintaining and ensuring implementation of the quality program. This responsibility includes oversight of activities under the guidance of this CQP, performing periodic reviews of the processes being implemented, evaluation of any recommendations made by the project team over the course of the project regarding use of the processes, and implementing continuous improvement evaluations of the quality program.

2.2.2 Project Manager

The primary responsibility of the Project Manager is the overall direction of the project. The Project Manager is accountable for work activities undertaken as part of this project. As such, the Project Manager will provide the managerial administrative skills to ensure that resource allocation, planning, execution, and reporting meet contract and project requirements. The global quality-related responsibilities of the Project Manager may include, but are not limited to, the following:

- Organization of the project staff and assignment of responsibilities
- Understanding of contract and scope of work for the project
- Ensuring that required submittals are completed and submitted, as required in the contract
- Communication to the project staff regarding client requirements and quality practices
- Identification, documentation, and notification to the client and project team of changes in the scope of work, design/engineering specifications and drawings, project documentation, and activities
- Supervision of preparation and approval of project-specific procedures, project plans, and design/engineering specifications and drawings
- Approval of project design basis, design parameters, drawings, and reports
- Approval of project construction methodologies
- Dissemination of project-related information from the client, such as design basis, input parameters, and drawings
- Liaison for communications with the client and subcontractors
- Liaison for communications between the project staff and other internal groups
- Determination of whether drawings require independent review
- Investigation of nonconformance and implementation of corrective actions
- Evaluation of the effect of nonconformance on the project and the appropriateness for reporting such items to the client, and providing appropriate documentation for reporting
- Determination that changes, revisions, and rework are subject to the same quality requirements as the original work
- Serving as final reviewer prior to release of project information
- Approval and signing of outgoing correspondence

The Project Manager may assign a portion of these responsibilities to the Lead Construction Manager, who will remain onsite throughout project field activities.

2.2.3 Lead Construction Manager

The Lead Construction Manager is responsible to the Project Manager for efficiently applying the resources of the project team to execute the construction phase of a specific project. The Lead Construction Manager is responsible for all technical, personnel, construction methodology, quality, safety, and local client interface details of the project and the project team while mobilized to the project site. The Lead Construction Manager must manage, lead, and control his/her assigned projects. They manage site activities to be performed, lead the project team so the work is done efficiently and correctly, and control the use of resources to meet project objectives within the authorized budgets. The Lead Construction Manager must also be actively involved in the oversight and guidance of subcontractor efforts. His/her objective is to produce a quality work product within the authorized schedule and budget. To accomplish this goal, the Lead Construction Manager:

- Organizes, directs, and controls site personnel and resources
- Coordinates and communicates with the Project Manager, QA Manager, QC Representatives, and Health and Safety Coordinator to keep them fully informed of the work plans and progress
- Conducts production/schedule meetings
- Conducts weekly status meetings
- Continuously monitors work progress, quality, safety, and adherence to authorized work scopes, budgets and schedules
- Compliance with HSP requirements and activities
- General oversight and coordination of Construction Managers and subcontractor activity
- Preparation of daily and weekly field reports documenting subcontractor performance
- Oversight and coordination of testing activities
- Certifying the appropriate aspects of QC activities
- Performing the three phases of control and inspection activities for definable feature of work
- Confirming utility clearance is completed prior to intrusive work being performed
- Monitoring the status of property access
- Verifying that proper signs are installed and that roads are maintained and can accommodate construction traffic
- Ensuring control testing is performed in accordance with the specifications, drawings, and project plans
- Assure documentation of all quality activities

- Ensuring that nonconforming items are corrected or addressed through Requests for Information (RFIs)
- Performing audits and surveillance of project activities as necessary to ensure the quality of service, product, and workmanship meets the requirements of the project
- Maintain project files and document controls

2.2.4 Project QC Representative

The QC Representative is an individual assigned by the Project Manager, with concurrence from the QA Manager, to implement and manage the site-specific QC requirements in accordance with the CQP. The QC Representative will be trained and experienced in performing inspections, surveillance, testing, and other QC requirements, as required by the CQP. The QC Representative may be assigned other project duties, as qualified, such as Lead Construction Manager, Project Engineer, Health and Safety Coordinator, etc. In such cases, that person will be responsible for the quality of work on the job.

The QC Representative will review the CQP and become familiar with project requirements. The QC Representative will assist and represent the QA Manager in continued implementation of the project plans. This position requires a thorough understanding of construction, remediation, as well as a clear understanding of the project's inspection and documentation requirements. The QC Representative is responsible for: conducting submittal reviews, oversight and coordination of all testing activities, certifying the appropriate aspects of QC activities, and attending and preparing minutes for the weekly status meetings and the Coordination Meeting. The QC Representative carries tremendous responsibilities and serves a critical role in the successful performance of the project quality requirements.

It is essential that the QC Representative be on the site at all times when construction is performed on the project. In his/her absence, the QC Representative is responsible for designating an alternate QC Representative and obtaining concurrence from the Project Manager and the QA Manager.

Throughout the construction activities, the QC Representative is responsible for, at a minimum, the following:

- Performing the three phases of control and inspection activities for definable feature of work
- Confirming utility clearance is completed prior to intrusive work being performed
- Monitoring the status of property access
- Verifying that proper signs are installed and that roads are maintained and can accommodate construction traffic
- Inspecting all delivered materials
- Monitoring delivery, handling, and storage of materials per the specifications
- Reviewing manufacturer material certifications

- Ensuring that subcontractor and project team members have the required qualifications, training licenses, and certifications
- Ensuring control testing is performed in accordance with the specifications, drawings, and project plans
- Documenting all quality activities
- Ensuring that nonconforming items are corrected or addressed through RFIs
- Performing audits and surveillance of project activities as necessary to ensure the quality of service, product, and workmanship meets the requirements of the project

The QC Representative will also coordinate with and assist the QA Manager and/or Celotex project representative in the performance of quality audits and inspections.

The QC Representative has the authority to stop work on all or any project work activity due to nonconformance with the CQP, HSP, project plans, specifications, and drawings. Onsite personnel will be encouraged to discuss concerns with the QC Representative and supporting technical personnel. In the event that the QC Representative is informed of and/or detects an incident of project nonconformance, the QC Representative will perform an initial investigation, evaluate the course of corrective action required, document the incident, and report the incident to the Lead Construction Manager, Project Manager, and QA Manager.

2.2.5 Construction Managers

The Construction Managers will receive direction from the QC Representative for implementing and overseeing the site-specific QC requirements in accordance with the CQP. The Construction Managers will perform inspections, surveillance, testing, and other QC requirements, as required by the CQP. The Construction Managers may be assigned other project duties, as qualified, and as experience allows such as Health and Safety Coordinator.

The Construction Managers will review the CQP and become familiar with project requirements. The Construction Manager will assist and represent the QC Representative and QA Manager in continued implementation of the project plans. This position requires a thorough understanding of construction, remediation, as well as a clear understanding of the project's inspection and documentation requirements. The Construction Manager is responsible for:

- Compliance with HSP requirements and activities
- Oversight and coordination of daily subcontractor activities
- Preparation of daily and weekly field reports documenting subcontractor performance
- Oversight and coordination of testing activities
- Certifying the appropriate aspects of QC activities

- Performing the three phases of control and inspection activities for definable feature of work
- Confirming utility clearance is completed prior to intrusive work being performed
- Monitoring the status of property access
- Verifying that proper signs are installed and that roads are maintained and can accommodate construction traffic
- Inspecting all delivered materials
- Monitoring delivery, handling, and storage of materials per the specifications
- Reviewing manufacturer material certifications
- Ensuring control testing is performed in accordance with the specifications, drawings, and project plans
- Documenting all quality activities
- Ensuring that nonconforming items are corrected or addressed through RFIs
- Performing audits and surveillance of project activities as necessary to ensure the quality of service, product, and workmanship meets the requirements of the project

The Construction Manager carries tremendous responsibilities and serves a critical role in the successful performance of the project quality requirements.

2.2.6 Technical Lead

The Technical Lead for the project will provide knowledge transfer from design to the construction phase and engineering support during construction activities. Responsibilities include supporting the project as required during report preparation and closeout. These support activities are anticipated to include:

- review of key documents provided by subcontractors and generated by the field team to ensure consistency with USEPA-submitted Removal Action Work Plan
- responding to and coordinating resolution of issues that may potentially arise if unforeseen conditions are encountered during excavation
- serving as a go-to person to offload the Project Manager, Quality Assurance Manager, or Lead Construction Manager when requested
- supporting cross-project communications and team management to maintain consistent use of resources and overall project documentation
- supporting analytical laboratory subtasks, including results management and invoice review similar to that conducted for the residential soil sampling activities
- serving as a liaison between the residential remediation team and activities being conducted concurrently for other aspects of the Celotex project
- leveraging knowledge of the project and stakeholders to work with the community coordinator as issues or questions arise during project implementation
- coordinating status reporting to USEPA in accordance with anticipated requirements
- technical review of the Removal Action Completion Report

The Technical Lead will also be responsible for transferring the additional sampling results for new properties to the construction team in support of integrating additional residential properties into the remediation schedule effectively and efficiently.

Subcontractors include those organizations supplying quality materials or services to the project. CH2M HILL assumes overall responsibility for conformance to the quality requirements for the subcontracted items and services. However, it is the responsibility of each subcontractor to plan, manage, and accomplish the construction activities in accordance with the appropriate documentation.

Subcontractors are responsible directly to the Lead Construction Manager for completion of the portion of project activities assigned, and to the QC Representative for quality activities. Subcontractors will verify that construction and materials used to perform the activities associated with the project comply with the requirements of the project plans, specifications, and drawings.

3. Meetings

3.1 Pre-Construction Meeting

The Project Manager will schedule and administer a pre-construction meeting at the site after Notice to Proceed (NTP) and prior to start of construction at the site. During the conference, ground rules and understandings are established between the project stakeholders. The purpose of this meeting is to ensure that all parties involved in the project understand and agree on the SOW, schedule, submittal requirements, documentation requirements, change management processes and procedures, construction means and methods, reporting and communication requirements, health and safety requirements and protocols, etc.

Agenda will include, but not necessarily be limited to, the following:

- Designation of responsible personnel
- Lines of authority and communication
- Health and safety
- Use of the site for storage, vehicle parking, access routes, and other site requirements
- Owner's requirements
- Coordination with other contractors and residential property owners
- Temporary facilities and controls provided by CH2M HILL
- Field offices
- Security and housekeeping procedures
- Procedures for processing field decisions, submittals, substitutions, applications for payments, proposal requests, Field Orders, Work Change Directives, Change Orders, and closeout procedures
- Progress schedules
- Procedures for testing and inspection
- Procedures for maintaining record documents

Minutes of the meeting will be prepared by the Lead Construction Manager and Project Manager and distributed to the participants and those affected by decisions made. At a minimum, the CH2M HILL project team and major subcontractors will be in attendance at this meeting.

3.2 Preliminary Schedule Review Meeting

A preliminary schedule review meeting will be conducted at the time of the pre-construction Meeting. The goal of the project is to complete excavation, backfill, and restoration activities on or before the contract time of 150 calendar days. The project schedule will need to satisfy the requirements of specifications Section 01 11 00, Subsection 3, Construction Progress Documentation. Five (5) days prior to the pre-construction meeting, the subcontractor will submit a Detailed Progress Schedule beginning with Notice to Proceed and continuing through Final Completion for CH2M HILL review. When accepted by CH2M HILL, the Detailed Progress Schedule will replace the Preliminary Progress Schedule submitted with the bid and become the Baseline Schedule. Subsequent revisions will be considered as Updated Progress Schedules.

3.3 Residential Pre-Construction Meeting

A residential pre-construction meeting will be conducted with the Property Owners 7 to 10 days before mobilization to the address. During the pre-construction meeting, a copy of the edited residential survey notes and construction drawings will be provided showing information gathered during the Residential Survey meeting. The meeting will be used to discuss and confirm actual schedule, access, restoration, and security issues. CH2M HILL will coordinate and lead the meetings with the Property Owners and Arrowhead personnel. Meetings may be scheduled outside of normal working hours and on weekends to accommodate the Property Owners' schedules. More than one meeting may be required with a Property Owner. All parties will be required at all meetings until details are concluded.

During the meeting a "Property Owner Pre-construction Meeting Checklist", Appendix A.1, will be completed and any special provisions noted. At the conclusion of the residential preconstruction meeting, the Property Owner, Arrowhead, and CH2M HILL shall sign a Property Owner Agreement authorizing work to be performed at that property.

3.4 Progress/Schedule Meetings

Progress Schedule meetings will be conducted in accordance with the requirements of specifications Section 01 11 00, Subsection 3, Construction Progress Documentation. The meeting will be scheduled and administered by the Lead Construction Manager throughout the progress of the Work at minimum bi-weekly intervals.

Agenda will include, but is not limited to, the following:

- Review of minutes of previous meeting
- Review of schedule showing work progress since last meeting
- Field observations, problems, and decisions
- Identification of problems which impede planned progress
- Review of health and safety concerns and issues

- Maintenance of the progress schedule
- Planned progress during succeeding work period
- Coordination of project progress
- Maintenance of quality and work standards
- Effect of proposed changes on progress schedule and coordination
- Change orders
- Applications for payment
- Other business relating to the Works

At a minimum, the Lead Construction Manager, Health and Safety Coordinator, QC representatives, and subcontractors and will attend this meeting. The Lead Construction Manager will record minutes and distribute copies to participants and those affected by decisions made.

3.4.1 Project Status Meetings

After the start of site work and throughout project execution, the Lead Construction Manager will conduct project status meetings. Project status meetings should be held weekly and will be attended by the Lead Construction Manager, Health and Safety Coordinator, QC Representatives, and subcontractor representatives as appropriate. The Celotex project stakeholders may attend any of these meetings. At a minimum, the following will be accomplished at each meeting:

1) Review the minutes of the previous meeting

2) Review the schedule
   a) Work or testing accomplished since last meeting
   b) Rework items identified since last meeting
   c) Rework items completed since last meeting

3) Review the status of submittals
   a) Submittals reviewed and approved since last meeting
   b) Submittals required in the near future

4) Review the work to be accomplished in the next 2 weeks and documentation required.
   a) Establish completion dates for rework items
   b) Inspections required
   c) Testing required
   d) Status of offsite work or testing
   e) Documentation required

5) Discuss health and safety issues, i.e., near-misses, incidents

6) Resolve quality issues, i.e., nonconformance, rework, corrective actions

7) Resolve production problems

8) Address items that may require revising the CQP or other project plans
    a) Changes in procedures

Meetings conducted will be recorded in Project Status Meeting Minutes, prepared by the QC Representative. The Project Status Meeting Minutes will be attached to the Daily Report. These meetings may be held in conjunction with other meetings (i.e., tailgate safety meetings, progress meetings, planning meetings, etc.)

3.4.2 Daily Tailgate Meetings

Daily tailgate meetings shall be conducted every workday morning at 7 a.m. Central time with CH2M HILL. Attendees required for this meeting will be determined at the pre-construction meeting. The designated personnel (including lower-tier Subcontractors) shall attend these meetings. Documentation of the meeting shall be provided to CH2M HILL by 9 a.m. that same day.

Daily tailgate meetings shall discuss the following subjects, at a minimum:

1. The work planned for the day
2. Changes in work assignment
3. Health and safety issues
4. Quality issues
5. Review problems encountered the previous day

Review and sign the Pre-Task Safety Plan (PTSP) prior to beginning any work onsite

3.5 Residential Post-Construction Meeting

Residential post-construction meetings will be conducted with Property Owners following completion of restoration to review acceptability of completed work and to develop punch list items as required. During the meeting, a copy of the edited survey notes and construction drawings will be reviewed showing information gathered during the residential pre-construction meeting. Photographs and video of the restored work will be documented. The Honeywell Community Representative and CH2M HILL will coordinate and lead the meetings with the Property Owner, and an Arrowhead representative in attendance at the property address. Meetings may be scheduled outside of normal working hours and on weekends to accommodate the Property Owner's schedule. Upon acceptance of the work all parties will provide their signature to a sign off sheet.

CH2M HILL will conduct a second residential post construction meeting, if required, with the Property Owner after completion of punch list items for that property. At the conclusion of the meeting the Property Owner shall sign the Property Owner Agreement indicating work was completed.

3.6 Project Post-Construction Meeting

CH2M HILL and Arrowhead shall conduct post-construction inspection meeting, which will be scheduled after completion of field activities and "project" substantial completion, but prior to demobilization. The purpose of this final inspection/meeting is to close out any punch list items, discuss schedule for demobilization, and delivery of all required deliverables.

4. Submittals

Contract submittals will be required for the materials identified for use within the contract, specifications, and drawings. These items are to be submitted to the Lead Construction Manager for review and approval prior to and following construction activities.

Construction QC submittals are those submittals generated by either the QC Representative or the subcontractor(s) during or immediately prior to construction to demonstrate compliance with the project plans, specifications, and drawings. Construction QC submittals include schedules, product data, samples, administrative and close-out submittals, and additional technical support data presented for review and approval. Submittal requirements are identified in tabular form in the Submittal Register. For materials/equipment procured directly by CH2M HILL, the QC Representative is responsible for ensuring the proper submittals are provided by the suppliers prior to accepting delivery. For materials/equipment supplied by the subcontractor(s), the QC Representative is responsible for ensuring the proper submittals are provided and approved prior to delivery or installation.

4.1 Construction Quality Control Submittal Responsibilities

The QC Representative is responsible for ensuring that the subcontractor submit his submittals in a timely manner to ensure the project schedule can proceed without any adverse impact. The Honeywell Celotex project will require submittals for soil materials, concrete, sand, fencing, landscaping and other materials to be incorporated into the work. The QC Representative and subcontractor are to ensure that submittals required to begin construction activities are submitted at the pre-construction meeting or should be submitted within a week of the meeting to be approved by the QC Representative. Timely submittal, review, and approval will enable the materials to be ordered and delivered to keep the project proceeding on or ahead of schedule.

The QC Representative will monitor submittal activities to verify:

- Completeness of submittals
- Inclusion of all required submittals
- Submittal schedule status
- Current submittal status
- Re-submittals

The QC Representative will log and track submittals in the Submittal Register. Specific responsibilities regarding submittals include:

- Coordinating submittal actions
- Maintaining necessary submittal records in an organized fashion
- Maintaining and tracking submittals in the Submittal Register

- Reviewing and certifying submittals for compliance with the project plans, drawings, and specifications
- Approving submittals except those designated to be approved by the Technical Lead
- Checking all material and equipment delivered to the project for compliance with the project plans, drawings, and specifications

The Project Manager and Technical Lead will also review the submittals, although submittals are approved by the QC Representative.

It is unrealistic to expect the QC Representative to review and approve all submittals. Very few individuals are sufficiently qualified in all the disciplines required for a particular project. Therefore, in instances where the QC Representative is not qualified to approve/disapprove a submittal, the QC Representative will forward the submittal to the Project Manager or Technical Lead who will route the submittal to the appropriate approver. Submittals requiring review/approval by either the Technical Lead or the discipline leads should clearly be identified in the Submittal Register. The QC Representative is responsible for coordinating the submittal transmittal and approval process and for ensuring that the process does not impact the project schedule.

4.2 Submittal Review and Control

CH2M HILL will control and schedule all submittals. These submittals include all items listed in the contract document and listed or specified in the project specifications, drawings, and plans. The Submittal Register form is included in Appendix A.2. The form will be completed prior to executing work that requires "pre-submittals" such as planning documents (work plans, etc.); employee certifications and qualifications; project schedules; survey data; and material acceptance samples and testing results. In-progress submittals will be processed and maintained during the course of the project with the status indicated on the Submittal Register as well. Units of weights and measures used on all submittals will be consistent with those used in the project documents.

Each submittal will be reviewed for completeness and compliance with contract requirements by individuals qualified to perform the review of that specific item. The submittal reviewers and approvers will be designated during the pre-construction meeting.

Prior to each submittal, the Project Manager or QC Representative will certify that the submittal is in compliance with the project requirements. Submittals that do not comply with the requirements will be returned to the originator for correction and re-submittal. Substitutions or variations of specified requirements will be clearly noted. Certification of the approved submittals will be indicated by signing or initialing and dating the submittal form by the Project Manager or QC Representative. Submittals include, but are not limited to, the following:

- Vendor design calculations, shop drawings, etc.
- Personnel qualifications (welding, etc.)
- Product data
- Permits
- Samples
- Catalog cuts/pages

- Production, inspection, and test reports
- Material certifications
- Progress reports, safety reports, manpower reports, etc.
- As-built or certified data
- O&M manuals
- QC records and certifications
- Sample and test results
- QC reports
- Construction photographs
- Contract close-out documents
- Completed waste manifests and disposal certificates

The QC Representative is responsible for updating the submittal register at least weekly. He/she will forward a copy of the Submittal Register to the Project Manager and QA Manager at the end of each month of project work.

4.3 Stakeholder Approval of Submittals

If a submittal requires Stakeholder/Property Owner approval, it should be clearly indicated in the residential pre-construction survey records, on the drawings, and on the Submittal Register. Submittals for items that are an extension of the work and may impact the progress of the work will need to be scheduled and processed in advance.

These submittals still require review for conformance and certification by the QC Representative. Submittals requiring stakeholder approval must be accompanied by a Transmittal Form (provided in Appendix A.3).

5. Definable Features of Work

A definable feature of work (DFOW) is a task that is separate and distinct from other tasks and has separate control requirements.

The DFOWs for this project are as follows:

1. Mobilization & Site Preparation (including temporary facilities, fence and gates)
2. 140 plus residential pre-construction surveys.
3. Site clearing
4. Site excavation
5. Site backfill
6. Site landscaping restoration – Trees, Plants and Sod
7. Landscape maintenance
8. 140 plus residential post-construction meetings and substantial completions
9. Project substantial completion milestone
10. Decontamination and demobilization

6. Three Phases of Control

6.1 Three Phases of Control

The Three Phases of Control shall be performed for each DFOW to ensure that work complies with contract and specification requirements. A DFOW is a task or feature that has a distinct beginning and end, as well as separate control requirements. The three phases of control are comprised of the: a) Preparatory Phase, b) Initial Phase, and c) Follow-Up Phase.

The three phases of control shall adequately cover appropriate on-site and off-site work.

6.1.1 Preparatory Phase

The preparatory phase culminates with the planning and design process leading up to actual remediation of a specific site or sites. Successful completion of the Preparatory Phase verifies that the project delivery, quality, and safety plans have been completed and are ready to be implemented. For each DFOW listed in section 5.0 of this CQP, the following events must be performed during the preparatory phase by the QC Representative with the Lead Construction Manager, the H&S manager, and the Construction Manager responsible for the DFOW:

- Confirm that the appropriate technical specifications are incorporated into the project work plan and review applicable specifications.
- Confirm that the appropriate contract drawings are incorporated into the project plans and review drawings.
- Verify that all shop drawings and submittals have been approved by the proper approving authority (including factory test results, when required).
- Confirm that the testing plan coincides with the work plan and that adequate testing is called for to assure quality delivery.
- Confirm definition of preliminary work required at the work site and examine the work area to confirm required preliminary work has been properly completed.
- Confirm availability of required materials and equipment. Examine materials and equipment to confirm compliance with approved submittals and procedures. Examine mock-ups and any sample work product to confirm compliance with approved submittals.
- Review the HSP and activity hazard analysis (AHA) to ensure that safety concerns are adequately addressed and applicable safety requirements have been incorporated into the plan. Confirm that the appropriate material safety data sheets (MSDS) have been identified and properly submitted.

- Discuss construction methods to be employed during the remedial action. Identify checkpoints and areas of evaluation that will allow determination that the appropriate quality of construction is being achieved.
- Confirm permits and other regulatory requirements are met.

Results of the activity are to be documented in the Daily Report.

6.1.2 Initial Phase

The initial phase occurs at the startup of the remedial activities, or construction, associated with a specific DFOW. The initial phase confirms that the CQP is being effectively implemented and the desired results are being achieved.

During the initial phase, the initial segment of the DFOW is observed and inspected to ensure that the work complies with contract and specification requirements.

The following shall be performed for each DFOW:

- Establish the quality of workmanship required to properly deliver the project in accordance with contract requirements. The QC Representative ensures that supervision has made the work crews aware of expectations associated with the construction methods established under the preparatory phase. This assurance is to be achieved via observation of the initial work activities as well as interaction with the Lead Construction Manager and responsible construction manager.
- The QC Representative will serve to guide the Lead Construction Manager and responsible construction manager in resolving conflicts. Should conflicts arise in establishing the baseline quality for the DFOW, the responsibility to resolve the conflict falls to the QC Representative. Should the conflict not be resolved in a manner that satisfies the Contract requirements, the QC Representative must elevate the conflict to the QA Manager and issue a non-conformance report. The QC Representative may direct a cessation of work activity, with the concurrence of the QA Manager, should the issue jeopardize the results of the DFOW, or put the project at risk of non-compliant performance.
- Evaluate the HSP and AHA against actual work conditions with the Lead Construction Manager and responsible construction manager to ensure that the hazard analysis conducted to prepare the safety plan adequately addressed field conditions. Confirm that applicable safety requirements are being implemented during construction activities.
- Observe and evaluate the performance of testing technicians. Confirm with the Lead Construction Manager and/or responsible construction manager that testing is being performed in accordance with the testing plan and that all required protocols are being observed. Review all reports and documentation associated with extraction, packaging, transporting, and testing of samples. Note any discrepancies and required correction immediately. Work not corrected immediately is to be recorded, clearly describing the discrepancy, using the Non-Conformance Report, Appendix A.12.

Upon completion of the initial phase activities, results are to be documented in the Daily Report (see Appendix A.6). Should results be unsatisfactory, the initial phase will be rescheduled. The initial phase will be repeated for each new crew working on site or any time when specified quality standards are not being met.

6.1.3 Follow-Up Phase

Completion of the initial phase of QC activity then leads directly into the follow-up phase, which addresses the routine day-to-day activities on the construction site. Inspection activities associated with each DFOW are to be addressed within the Daily QC Report. Specific concerns associated with the follow-up include:

- Inspection of the work activity to ensure work is in compliance with the contracted remedial action
- Evaluation and confirmation that the quality of workmanship is being maintained at a level no less than that established during the initial phase
- Evaluation and confirmation that required testing is being performed in accordance with procedures established during the preparatory phase and confirmed during the initial phase
- Confirmation that non-conforming work is being corrected promptly and in accordance with the direction provided by the QC Representative

The follow-up phase inspections should be performed daily until the completion of each DFOW. Final follow-up checks will be conducted and all deficiencies corrected before the start of additional DFOWs that may be affected by the deficient work. Nonconforming work must not be built upon or concealed.

Additional preparatory and initial phases on the same DFOW must be conducted if:

- The quality of ongoing work is unacceptable.
- There are changes in the quality staff, on-site production supervision, or work crew.
- Work on a DFOW is resumed after a substantial period of inactivity.
- Other problems develop.

6.2 Off-Site Activities

Initiation of activities in either the preparatory or initial phase that are conducted away from the project site must be preceded by notification to the Honeywell Remediation Manager. This notification is to occur as required in the specifications. The PM must include off-site activities in the project schedule to ensure that the QC Representative may provide the correct notice to the Honeywell Remediation Manager.

7. Inspections

7.1 Three Phases of Control Inspections

Inspections will be performed throughout each of the three phases of control. These inspections are detailed in the specifications.

7.2 Punch List Inspection

Punch list inspections will occur near the completion of work for each property. The QC Representative will conduct an inspection of the work and develop a punch list of items that do not conform to the approved drawings and specifications. Refer to Appendix A.13, Punch List. The punch list will include in any remaining items on the Rework Items List which were not corrected prior to the punch list inspection (see Appendix A.4). The punch list will include the estimated date by which the deficiencies will be corrected. The QC Representative or staff will make follow-on inspections to ascertain that all deficiencies have been corrected. Once this is accomplished, CH2M HILL will notify the stakeholders that the feature of work is ready for the pre-final inspection.

7.3 Pre-Final Inspection – Residential Post-Construction Meeting

The Stakeholders will perform a pre-final inspection, residential post-construction meeting, to verify that the work feature is complete and meets contract specifications/drawings. A pre-final punch list may be developed as a result of this inspection (see Appendix A.13). Each deficiency noted in the punch list will be referenced (applicable specification paragraph, drawing, etc.). The QC Representative will ensure that all items on this list are corrected prior to notifying Stakeholders that a final inspection can be scheduled. Any items noted during the pre-final inspection will be corrected within the time slated for completion of the entire work, or any particular increment thereof if the project is divided into increments by separate completion dates.

7.4 Residential Post Construction Meeting - Final Acceptance Inspection

The Honeywell Community Representative, QC Representative, Lead Construction Manager, other project management personnel, and the Property Owner will be in attendance during the residential post-construction meeting/inspection. Other Stakeholders may be in attendance as well. The Lead Construction Manager, based upon results of the pre-final inspection, will schedule the final acceptance inspection with the HW Community Representative. The Property Owner will also be requested to participate in completing the Residential Property Satisfaction Checklist, Appendix A.14.

A final acceptance inspection will be considered closed when the work has been accepted by the stakeholders and that acceptance has been documented and signed by all parties. This will be documented in a final inspection report.

8. Testing

Testing will be performed and will verify that control measures are adequate to provide a product that conforms to project plans, specifications, and drawings. Testing will be identified as specific activities on the schedule and on the Testing Plan and Log. Testing will be performed by laboratories and testing companies with accreditation and certifications through industry recognized organizations and standards. Other international programs that are equivalent may also apply.

Testing services required for execution of the project will be contracted for by the Subcontract Administrator (KA) directly by CH2M HILL. The KA will procure or coordinate the testing services according to a Statement of Work (SOW) prepared by the Project Manager and Technical Lead. The SOW will specify specific American Society for Testing and Materials (ASTM) or similar standards, as specified in the project plans, designs, and specifications, and will specify the nature of the report or deliverable required of the testing laboratory, including requirements for professional certification. Scheduling of site services will be the responsibility of the QC Representative.

The following activities will be performed and documented during testing:

- Verify that testing procedures comply with contract requirements.
- Verify that facilities and testing equipment are available and comply with testing standards.
- Check test instrument calibration data against traceable certified standards.
- Verify that recording forms and the test identification control number system, including all test documentation requirements, have been prepared.
- Record results of all tests taken, both passing and failing tests, on the QC report for the date taken. Give section reference, location where tests were taken, and the sequential control number identifying the test. Actual test reports may be submitted later with a reference to the test number and the date taken.

The test results must be signed by the testing laboratory's representative authorized to sign certified test results. The signed reports, certifications, and other documentation will be submitted to Celotex project by the QC Representative.

8.1 Testing Plan and Log

As tests are performed, the QC Representative will record the following information on the Testing Plan and Log: date the test was conducted, date the test results were forwarded to the Celotex project team, results of the tests, whether they comply with the specifications, and any remarks and acknowledgment that an accredited testing laboratory was used. Applicable project requirements, tests or analytical procedures used must be cited on the Testing Plan and Log. The QC Representative will obtain all test results from the

Subcontractor, update the Testing Plan and Log at a minimum of once a week, and maintain the records onsite in the project files.

A copy of the Testing Plan and Log will be attached to the Daily Report at the end of each month and forwarded to the Project Manager and QA Manager. The Testing Plan and Log for this project is included in Appendix A.5.

8.2 Testing Companies

Independent testing companies and testing laboratories that are authorized or certified to operate in the State of Illinois will be employed on this project. Prior to the start of the work, the name(s), facility information, qualifications, staff, and certifications of the testing companies and laboratories will be submitted to the Honeywell Remediation Manager. In addition, a copy of the testing company's or testing laboratory's most recent inspection report made by the Materials Reference Laboratory of the National Institute of Standards and Technology, with memorandum of remedies of any deficiencies, will be submitted.

9. Material Inspection, Handling and Storage

It is the responsibility of the QC Representative to ensure that all material received at the project site are inspected for compliance with the project requirements and have not been damaged in delivery, prior to being accepted for use on the site. Any material not meeting the project requirements will be rejected or a written variance will be issued by the QC Representative or Project Manager. The performance and results of material inspections will be documented in the Daily Report.

9.1 Commercial Grade Items

Commercial grade items are defined as "off the shelf" items that are identified in manufacturer's published product descriptions, catalogs, and part numbers.

Commercial grade items shall be identified in the purchase order by the manufacturer's published product description (for example, catalog number).

Receipt inspection of a commercial grade item shall determine that:

- Damage was not sustained during shipment.
- The material received is the material ordered.
- Documentation, applicable to the material, has been received and is acceptable.

10. QC Reporting Requirements

10.1.1 Daily Report

The daily report is the daily record of operations on the job site and must be kept current. It is an essential tool for recording and reporting the daily production safety, and QC activities of the project. These reports are the official record of work performance and compliance with project plans, drawings, and specifications. It is therefore critical that the reports are correct and timely.

The QC Representative is responsible for preparing the daily report and submitting the reports to the Project Manager and QA Manager for review. The Project Manager is responsible for submitting the daily report to the Honeywell Remediation Manager. The Lead Construction Manager and/or Construction Managers will provide operational information and the Health and Safety Coordinator will provide information on the health and safety activities. The report also includes the reports from each subcontractor working on the site to address, at a minimum, the following:

- Quality aspects of the project that is being performed by the subcontractor
- Scheduling and resource issues
- Site safety inspections and concerns
- Environmental concerns
- Job progress
- Control inspections
- Tests performed and their results
- Personnel and equipment onsite
- Material received

The project team must review the daily reports for accuracy and completeness because these reports are used to prepare the final reports for the project. The Project Manager and QA Manager will review these reports and ensure the quality process is working on the project.

The daily report template, is included in Appendix A.6. The following should be attached to the Daily Report:

- Tailgate safety meeting minutes and signatures
- Project status meeting minutes
- Submittals
- Inspection Reports
- Test Reports
- Permits
- Chain-of-Custody records
- Waste disposal documentation (see Appendix A.7 for Transportation and Disposal Log)

10.1.2 Project Records

Records that are generated by the QC system must be maintained in an orderly manner. It is suggested that the QC Representative maintains a series of 3-ring binders for ready reference. These should be arranged by specification section, and tabbed to include the following items:

- Submittals including Submittal Register
- Project Tracker (spreadsheet) identifying status of progress for the 140 plus properties
- Daily reports
- Inspection reports
- Punch List inspection results
- Pre-final inspection results
- Final inspection results
- Rework items lists
- Test results including Testing Plan and Log
- Contract modifications
- RFIs arranged in numerical order
- Nonconformance notices and corrective actions
- Certificates and qualifications
- Warranty forms
- Calibration records
- Photographs and photo log (see Appendix A.8 for Photo Log Template)
- Correspondence

10.1.3 Field Documentation

The objective of field documentation is to ensure that appropriate project information is documented in logbooks during construction. This documentation is important for communicating activities with other staff members and Celotex project representative.

QC observations, inspections, and records of general QC activities on a regular basis are as follows:

- Record daily progress and associated QA and QC sampling
- Record construction operations, sequence, staging, etc.
- Maintain waste disposal records
- Describe deviations from expected conditions, or unexpected problems and their resolution

The QC Representative will maintain a record of daily QC activities during construction in a field log book. The field log book will be available upon request for review. The field log book will be used to record, at a minimum:

- Date of entry
- Project name and location

- Time that work starts every day
- Summary of weather conditions
- General description of work activities, size of work crew, and the equipment and personnel onsite
- Duration and type of breaks
- Start time and duration of downtime resulting from equipment breakdown, weather, or emergencies, etc.
- Summaries of QC meetings and actions recommended to be performed
- QC testing equipment and personnel
- Identification of work locations
- Description of materials delivered to the site, including QC data
- Decisions made regarding defective work or corrective measures implemented, or both
- Field tests
- Sampling activities

The bottom of each page of the field log book will be signed or initialed and each entry dated in order to show that notes are being taken on a daily basis.

A line-through will be placed on any portion of a log book page that is unused. One line strike-through will be used to show corrections to entries. The strike-through will be initialed and dated. No correction fluid may be used.

In addition, the same information will be documented in the daily report.

11. Change Control

Changes to final designs, approved project plans, field changes, and modifications to operating facilities are subject to design verification measures commensurate with those applied to the original approved documents. The Project Manager approves work plan changes in consultation with the Technical Lead.

RFIs will be used to communicate and document clarifications and modifications requested by the subcontractor. The RFIs will be tracked and logged by the QC Representative to ensure that each RFI is fully addressed and that changes to the plans, drawings, and specifications are completely and accurately documented. The RFI Log Template and RFI Form are included in Appendix A.9 and A.10.

Changes to materials, supplies, work approaches, and corrective actions during the construction effort will be documented in an overall effort to support sound engineering judgment and cost-effective project delivery. Changes during construction will be documented using the RFI process.

The RFI process involves identifying the situation in the field that requires change. This is done by either the Subcontractor or the QC Representative. When a change is identified by the subcontractor, the subcontractor reports the concern to the QC Representative. The QC Representative then prepares an internal memorandum, in the form of an RFI, identifying the concern and forwards it to the Project Manager. The PM reviews and forwards the RFI to the Honeywell Remediation Manager.

The RFI will contain the project number, an RFI Identification Number and a title. This information is used for RFI tracking. The Project Manager forwards the RFI to the appropriate design representative to evaluate the concern and prepare the appropriate response. The response should include a narrative explanation of the resolution and attach any drawings or specifications required to complete the work. The response is returned to the Project Manager and forwarded to the QC Representative and Lead Construction Manager for field implementation. The RFIs are numbered sequentially for the project and filed at the job site, with the Project Manager, and the design/engineering team.

Changes to construction drawings as a result of an RFI will be identified with a symbol in the border identifying the RFI identification number and title. The drawing should also be marked with a cloud, circle, etc. to distinguish the change from the original drawings. The sheet will then supersede the existing drawing in the drawing set.

The RFI process is a field construction tool for documenting changed field conditions or other issues that may require a deviation from project requirements identified in the project drawings and specifications. The RFI is intended to obtain input and concurrence from the Technical Lead responsible for the design. Approval of the RFI by the Technical Lead does not constitute approval for CH2M HILL or its subcontractors to perform work that is outside of the project scope or budget. In the event that an issues identified in the RFI may require a change to the project scope, schedule, or budget, this should be clearly conveyed in the RFI. In such instances, it is the responsibility of the Project Manager to seek and obtain

proper approval from the Honeywell Remediation Manager (in accordance with established Contract procedures) prior to implementing the change recommended in the RFI.

Changes to the work that do not involve costs or time may be authorized with the execution of a Field Order, Appendix A.11. The Field Order can be executed by the Project Manager and Lead Construction Manager to make small changes to the not impacting project cost or time and that is within the scope of the project.

12. Noncompliance and Corrective Actions

The QC Representative will notify the subcontractor of any detected noncompliance with the foregoing requirements. The subcontractor will take immediate corrective action after receipt of such notice. Such notice, when delivered to the subcontractor at the work site, will be deemed sufficient notification. If the subcontractor fails or refuses to comply promptly, the QC Representative may issue an order stopping all or part of the work until satisfactory corrective action has been taken. Noncompliance notification or stop work orders will be documented in the daily report and a Non-Conformance Report (NCR), see Appendix A.12. Completion of corrective action will be noted on the daily report. Verification of the corrective action and its results will be performed by the QC Representative and documented in the daily report.

12.1 Resolution of Conflicts

If the QC team detects a nonconforming item, the issue will be investigated by the QC Representative. If the QC Representative determines that additional corrective action is warranted, the QC Representative will document and review the issue with the Lead Construction Manager and Project Manager. The QC Representative has the authority to stop work on any nonconforming activity. If satisfactory resolution cannot be achieved between the QC Representative and the Project Manager, it will be elevated to the QA Manager, and if necessary, to senior management (i.e., Project Director, etc.). The Honeywell Remediation Manager will be notified of any nonconformance having significant impact on the project cost or schedule.

12.2 Corrective Measure Plan

Resolution of failing test results or noncompliance reports will be completed through a corrective measure plan. The corrective measure plan will be developed and documented by the QC Representative in conjunction with the Project Manager. The agreed upon corrective measure plan will be implemented and documented by the QC Representative. Completion of the corrective measure plan is the responsibility of the QC Representative.

Appendix A: Forms

List of forms

Property Owner Agreement - Residential Preconstruction Meeting
Residential Study Area Near the Former Celotex Site 2800 South Sacramento Avenue
Chicago, Illinois 60623

Address_____

Date of Meeting_____ Time of Meeting_____

Residential Survey Notes Given to Owner? Owner Initials Confirming Receipt _____

Construction Drawings Given to Owner? Owner Initials Confirming Receipt _____

Estimated Date for Start of Construction_____Estimated Duration for Construction_____ Days

Two Points of Continuous Access Planned? ☐Yes ☐No

Description of Access During Construction_____

_____

Description of Planned Maintenance of Existing Security Fencing During Construction _____

_____

Restoration Activities Planned_____

_____

Contractor will excavate the following areas:

☐Front Yard - Depth___ft ☐Side Yard – Depth___ft ☐Other Area #1 – Depth___ft

☐Back Yard – Depth___ft ☐Entire yard Depth___ft ☐Other Area #2 – Depth___ft

Description of Other Areas_____

_____

Owner agrees to remove and store the following items from the yard:

☐ Swimming Pool ☐Lawn Furniture ☐Statues/Grottos ☐Dog House ☐Hoses/Sprinklers

☐Automobiles/Parts ☐Swing Sets ☐Construction Supplies ☐Bikes ☐Children's toys

Other items resident agrees to remove from the yard_____

_____

Contractor will remove, store, and restore the following items from the yard:

☐ Swimming Pool ☐Lawn Furniture ☐Statues/Grottos ☐Dog House ☐Hoses/Sprinklers

☐Automobiles/Parts ☐Swing Sets ☐Construction Supplies ☐Bikes ☐Children's toys

Other items Contractor agrees to remove store, and restore from the yard:_____

_____

Resident understands that grasses, plants, trees, shrubs, flowers and ornamental plants will be removed and replaced as described below:

(Note: Each property will be different – propose allowance be established (based on type and number) and provided for annuals & perennials. Trees, shrubs, sod and other plantings need to be defined in detail and listed in this document that the resident will sign.

1.

2.

3.

4.

5.

6.

7.

(Continued as necessary)

Contractor will leave in place and protect the following itemized plants during construction:_____

Following restoration of the property the Contractor will maintain the new plants and sod as follows: Watering will be performed 15 times at 3 day intervals for a total of 45 days. The property owner will be required to mow the new grass, but no shorter than 2-inches during the maintenance period. (Note: will need to add any additional conditions as required. We will need to prepare a standard statement for this activity.) (May want to provide the CH2M HILL new project office phone number.)

Property Owner Agreement Signatures:

Date	Contractor Signature	Print Name
Date	CH2M HILL Representative	Print Name
Date	Owner Signature	Print Name

CH2M HILL RECORD USE:

Preconstruction drawing(s) number, file name:

Digital photo record description, numbers taken:

Digital video record description & number, file name:

SUBMITTAL REGISTER

PROJECT	PROJECT NAME		TASK ORDER NO:	TO NUMBER	ACTIVITY / TASK:			TASK DESCRIPTION			
ITEM NO	DESCRIPTION OF SUBMITTAL	REFERENCE Spec / Drawing	APPROVING REQUIREMENT: Approval (A) or Information (I)	APPROVING AUTHORITY: (CH or AE)	SUBMITTAL FREQUENCY: (One time, weekly, etc.)	DATE SUBMITTED TO APPROVER	APPROVING AUTHORITY NAME	TITLE / COMPANY OR AGENCY	STATUS: - Approved -Rejected	DATE APPROVED	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											

SUBMITTAL REGISTER

PROJECT:	PROJECT NAME		TASK ORDER NO	TO NUMBER	ACTIVITY / TASK:			TASK DESCRIPTION			
ITEM NO	DESCRIPTION OF SUBMITTAL	REFERENCE Spec - Drawing	APPROVING REQUIREMENT. Approval (A) or Information (I)	APPROVING AUTHORITY. (CH or AF)	SUBMITTAL FREQUENCY- (One time, weekly, etc.)	DATE SUBMITTED TO APPROVER	APPROVING AUTHORITY NAME	TITLE / COMPANY OR AGENCY	STATUS. -Approved -Rejected	DATE APPROVED	REMARKS

TRANSMITTAL

To: **From:**

Attn: **Date:**

Contract:

Subcontract: _____

Re:

We Are Sending You:

Quantity	Description

If material received is not as listed, please notify us at once

Remarks:

Copy To:

Rework Items List

Contract Number:						
Contractor: CH2M HILL Constructors, Inc.						
TO Number	Date Identified	Description	Referenced Spec or Drawing	Action Performed	Resolution	Date Completed

CH2M HILL CONSTRUCTORS, INC PROJECT NUMBER 360216	**DAILY REPORT** Version 1.0 (ATTACH ADDITIONAL SHEETS IF NECESSARY)	REPORT DATE : REVISION NO: REVISION DATE: REPORT NO:

TASK ORDER NO:	PROJECT NAME / LOCATION:				
PROJECT NUMBER:	PROJECT DESCRIPTION:				
PROJECT MANAGER:	QC REPRESENTATIVE:		PREPARED BY:		
AM WEATHER:	PM WEATHER:	MAX TEMP:	F	MIN TEMP:	F

TAILGATE TOPICS:

-
-

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

-
-

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

MATERIALS DELIVERED TO JOB SITE

Description of Materials Received	Make/Model/Manufacturer	Equipment Lot Number	Inspection Performed By	Number/ Volume/ Weight

COMMENTS (acceptance status, inspection findings, etc.):

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Employee	Work Performed	Employer	Employee Number	Title/Trade	Hours

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

-
-
-

Planned Work / Test for Tomorrow:

-
-
-

Planned Work / Test for Next Week:

-
-
-

INSPECTIONS PERFORMED

Task/Activity	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity	Test Performed	Results (Pass/Fail) - Criteria

QUALITY AND/OR PRODUCTION ISSUES AND RESOLUTIONS:

-
-
-

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?	Comment/Reason/Action
			Yes ☐ No ☐	
			Yes ☐ No ☐	
			Yes ☐ No ☐	
			Yes ☐ No ☐	

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the delivery order [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.):

-
-

VISITORS AND DISCUSSIONS:

-
-

ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:				Signature of Inspector:			
Accumulation / Stockpile Area Inspected:							
No of Containers::		No of Tank		No of Roll-Off Boxes::		No. of Drums	

Inspection Results:

TRANSPORTATION AND DISPOSAL

Transportation and Disposal Activites/Summary Quantitites:

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first name, middle initial, and last name on each completed daily inspection record. This form may be filled out electronically and signed electronically.

PREPARER'S SIGNATURE DATE

Reference	Test Required	Date Sampled	Sampled By	Tested By	Location of Test (on-site/ off-site)	Frequency	Date Test Completed	Remarks

TESTING PLAN & LOG

TO (TO NUMBER): (TASK DESCRIPTION), (PROJECT NAME), (PROJECT LOCATION)

Reference	Test Required	Date Sampled	Sampled By	Tested By	Location of Test (on-site/ off-site)	Frequency	Date Test Completed	Remarks

Transportation & Disposal Log

PROJECT NAME:						SUBCONTRACTOR:					
CTO NO:											
Site / Task / Activity	Container Type	Container Design	Waste Profile Sample Number	Transporter	Date Transported	Transporter EPA ID	Load ID	Disposal Facility	Disposal Facility EPA ID	Media	Waste Type (Haz, Nonhaz, TSCA, etc)

TAB C
Photo Log

CTO Number	Project Number	Project Name	Site	Film Cassette Number	Photo Number	Date	Time	Task and Description	View Direction	Taken By

Residential Removal Action - Former Celotex Site
Request For Information Log

CH2M HILL		Celotex Residential Removal Action				Project Number:	
		Chicago, IL					
RFI #	**Description of Issue**	**Submitted To**	**Date**	**Returned To**	**Date**	**Solution**	**Status**
1							
2							
3							
4							

REQUEST FOR INFORMATION/CLARIFICATION

CH2MHILL

PROJECT NO. 360216 **TO NO.**

PROJECT TITLE & LOCATION:

BRIEF DESCRIPTION OF RFI:

TO:	NAME		TITLE		
FROM:	NAME		TITLE		
Date Submitted:	RFI No		DC No		
Please Respond By:			Page:	of	
REFERENCE					
CDRL NO.(S):					
DRAWING(S)/SPECS:					

1) DESCRIPTION OF EXISTING CONDITION AND/OR DEFICIENCY:

NAME TITLE

PROJECT TEAM MEMBER SIGNATURE DATE

2) RECOMMENDED SOLUTION:

NAME	TITLE	NAME	TITLE
PROJECT MANAGER APPROVAL SIGNATURE	DATE	PROJECT TEAM MEMBER SIGNATURE	DATE

3) RESPONSE/DISPOSITION:

NAME		NAME	
LEAD ENGINEER SIGNATURE	DATE	PROJECT MANAGER SIGNATURE	DATE

RFC Required? Yes ☐ No ☐ **Schedule Impact?** Yes ☐ No ☐ **Cost Impact?** Yes ☐ No ☐

4) CTR RESPONSE/DISPOSITION CONCURRENCE:

NAME			NAME		
QC MANAGER SIGNATURE		DATE	AFCEE REP SIGNATURE		DATE
REVIEW DISTRIBUTION			**FINAL DISTRIBUTION**		
☐ KA	☐ CH2M PM ☐ CH2M PROJ ENG	☐ CH2M LEAD ENG ☐ Other	☐ KA	☐ CH2M PM ☐ CH2M PROJ ENG	☐ CH2M LEAD ENG ☐ Other

FORM NO.
TITLE: Field Order

PURPOSE:

PREPARED BY:

DIRECTED TO:

COPIES TO:

COMMENTS:

CH2MHILL

FIELD ORDER

TO CONTRACTOR: _____ FIELD ORDER NO: _____

PROJECT: _____ PROJECT NO: _____

OWNER: _____

ENGINEER: _____

The following minor changes in the work have been ordered and authorized:

Description of Changes:

Reason for Field Order:

Reference Drawing sheets and section(s) or detail(s):

Reference Specification section(s)/paragraph(s):

The intent of this Field Order is to authorize minor variations to the Contract Documents not involving a change in Contract Price or Contract Times and which are compatible with the design concept of the completed Project. This Field Order is binding upon OWNER and also on CONTRACTOR who will perform the work promptly. If OWNER or CONTRACTOR believes an adjustment to the Contract Price or Contract Times is necessary, the party may make a claim therefore in accordance with the General Conditions.

Issued by Engineer:

By: _____
Authorized Representative

Date: _____

Contractor Receipt Acknowledgement:

By: _____

Title: _____

Date: _____

Copy:
1. Owner
2. Field File

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NON-CONFORMANCE REPORT

PART 1 – General Information

Date Submitted:	NCR Number:
Submitted To:	Company/ Title/Position:
Prepared By:	Company/ Title/Position:
Project Name:	Project Number:
TO Number:	Contract Number:

PART 2 – Non-Conformance Report

Description of Non-Conforming Item or Condition				
Contract Requirement or Project Specification/Drawing				
Test/Inspection/Audit Identifying Non-Conformance				
Reportable Release?	Yes ☐		No ☐	
Material Name:			Quantity:	
Disposition:	Repair ☐	Rework ☐	Use-As-Is ☐	Reject ☐

PART 3 – Investigation/Root Cause Determination

Personnel Responsible for Investigative Process:
Investigative Process Findings:
Probable Root and Contributing Cause(s):

PART 4 – Corrective Actions

Proposed Corrective Actions and Completion Dates:		
Personnel Responsible for Implementation of Corrective Actions:		
Resulting Actions and Effectiveness of Those Actions:		
Personnel Responsible for Monitoring Effectiveness of Corrective Actions:		
Corrective actions have been completed and monitored for effectiveness.		
Signature	Company/Title	Date

PART 5 – Response Approval

Responses Accepted By		
Signature	Company/Title	Date
Signature	Company/Title	Date

PART 6 – Quality Control Follow-Up

Comments/Findings of Follow-Up Observation / Inspection / Audit:		
Verification Results	Satisfactory ☐	Unsatisfactory ☐

PART 7 – NCR Closure

NCR Closed		
	Program QA/QC Manager	
Signature	Company/Title	Date

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PUNCH LIST

DATE: ____________________

PAGE: 1 OF 1

PROJECT: ____________________ PROJECT NO: ____________________

CONTRACTOR: ____________________

INSPECTED BY: ____________________

Item	Location	Action Required	Accepted	
			By	Date

Property Owner Satisfaction Survey Form

Performance Close-out Document

Property Address: _____

Property Owner Name: _____

[NOTE: add a numeric scale for each question to arrive at an overall measurement for performance.]
highest rating, please grade/score the following questions concerning your satisfaction with the work performed.

	Yes/No	Grade 1-10:	COMMENTS:
Are you satisfied with the work?			
Unsatisfactory Work Items:			
Item #1.			
Item #2.			
Fencing acceptable:			
Sod growth satisfactory:			
Shrubs and Trees Satisfactory:			
Perennials-Rose bush allowance satsifactory:			
Did the contractor maintain access for you to and from the property?			
Any property damage not fixed:			
Was the contractor courteous at all times?			
Were you satisfied with the subcontactor working on your property?			

By CH2M HILL

Did the contractor provide an AHA drawing for the property?			
Was the property inspected by the contractor's utility locator?			
Was the excavation, backfill & landscaping completed within schedule			
Landscape maintenance met specification requirements:			
Punch list work completed within timely manner			
Subcontractor provided extra effort to please Owner/Resident:			

Owner Name: _____

Owner Signature: _____

Date: _____

Appendix D

APPENDIX D

Transportation and Disposal Plan

Final

Residential Removal Action Transportation & Disposal Plan

For the

Former Celotex Site

2800 South Sacramento Avenue

Chicago, Illinois 60623

Prepared for

Honeywell International Inc.

June 2007

CH2MHILL

Contents

1.0 Introduction

This transportation and disposal plan applies to residential removal activities associated with the Celotex Site, Residential Remediation project. This document provides the plan for transporting materials to and from remedial construction areas and disposing of wastes generated during construction activities.

The construction area consists of a staging area and up to approximately 180 individual residential properties. The primary staging area is located at the Monarch Asphalt property, 2800 South Sacramento, Chicago, Illinois, in Cook County. The Monarch Asphalt property is a separate, fenced, 2-acre portion of the 22-acre former Celotex Main Site (Main Site). The United States Geological Survey (USGS) reference for the Main Site indicates that it is situated in the West 1/2 of the Southwest 1/4 of Section 25, Township 39 North, Range 13 East of the Third Prime Meridian on the Englewood 7.5 Minute Quadrangle. A detailed location for the residential properties can be found in the remedial design specifications. The residential properties are located by their street address and are assigned a unique property number.

Waste materials generated during the remedial construction may consist of excavated polycyclic aromatic hydrocarbons (PAH)-impacted soils, plant materials, debris such as bricks, concrete, or wood, decontamination water, and other materials. The waste materials will be transported and disposed of at a licensed disposal facility approved by Honeywell International, Inc. Following the excavation of the properties, clean fill and other restoration materials will be imported to the area to backfill the excavations and restore the properties to the original grade. Restoration materials may consist of clean backfill material, topsoil, mulch or other materials and will be transported from the source area(s) to the remedial construction area.

2.0 Waste Handling Procedures

Waste handling procedures are provided in this section for wastes which are anticipated during the construction. All wastes will be disposed of in accordance with Federal, State, and local regulations. Management of wastes will be performed in accordance with Storm Water Pollution Prevention Plan (SWPPP) and project specifications.

2.1 PAH-Impacted Soil

Excavated PAH-impacted soil will be managed prior to disposal at an approved facility as non-hazardous waste. If materials are stockpiled prior to transport offsite, erosion control measures will be maintained around and covering the stockpile. Trucks transporting solids (soil, debris, etc.) will be covered with an Illinois Department of Transportation-approved tarpaulin during transport.

2.2 Plant Material

Stumps and roots structures will not be disposed of with vegetative material due to the soil contained within the roots. Stumps and plant root structures will be ground and mixed with the PAH-impacted soil for management and disposal. The remainder of the plant materials will be transported offsite for solid waste disposal at a licensed disposal facility.

2.3 Construction Debris

Construction debris may consist of wood, concrete, bricks or similar items removed from the residential properties during the remedial construction activities. The materials will be segregated and pressure washed to remove any residual soil from the surfaces. After pressure washing, the materials may be managed onsite and transported offsite for disposal as solid waste.

2.4 Personal Protective Equipment

Personal protective equipment (PPE) includes disposable coveralls, gloves, dust masks, etc. Used PPE or disposable equipment will be decontaminated to remove gross contamination and then disposed of as solid waste at a licensed disposal facility.

2.5 Decontamination Fluids

Decontamination fluids generated from the decontamination of equipment or personnel shall be containerized and characterized for disposal.

3.0 Transportation and Disposal of Wastes

3.1 Transportation

Each transportation vehicle and load of waste will be inspected before leaving the site. The quantities of waste leaving the site will be recorded. Waste will be transported by licensed commercial transporters.

Whenever possible, the haul vehicles will use interstate highways or other divided controlled-access roads first, and then in descending order, use United States highways, state routes, county roads, and city streets. This may not necessarily provide the most direct route, but will nonetheless be the order of routes used to travel from the remediation sites to the approved disposal facility.

3.1.1 Manifests/Haul Tickets and Other Shipping Documentation

Manifests or other haul tickets will be required for each load of material transported offsite. The manifests or haul tickets shall generally describe the contents of the load such as: non-hazardous soil, clearing and grubbing, and water from decontamination activities.

Each load of waste material will be documented prior to leaving the site. At a minimum, the manifest/haul ticket form will include the following information:

- Transporter information including name, address, contact name, and phone number
- Generator information including name, address, contact name, and phone number
- Site name including street and mailing address
- Description of waste
- Type of container (roll-off box, dump truck, tank truck, etc.)
- Container/truck number or other specific identifier
- Quantity of waste (volumetric estimate)

Additionally, the manifest or other haul ticket record will include the following information:

- Date and time truck or container load was picked up/loaded
- Date and time truck or container load was disposed
- Location of disposal
- Daily cumulative load number for each specific truck or container for the day

3.1.2 Waste Transport

The transporter will observe the following practices when hauling and transporting wastes

offsite:

- Minimize impacts to general public traffic.
- Decontaminate vehicles prior to re-use offsite or for hauling non-contaminated material (i.e., backfill soil) back to the site. The truck tires and exterior of the dump truck body shall be swept clean of dry soil and sand or washed clean of wet soil and sand prior to each truck leaving the excavation zone or the disposal facility.
- No materials from other projects will be combined with materials from the properties being remediated.
- Trucks transporting solids (soil, debris, etc.) will be covered with an Illinois Department of Transportation-approved tarpaulin during transport.
- Trucks transporting liquids will be sealed.
- Care will be taken during loading and transporting operations to minimize the potential for spillage, tracking, or cross contamination. Contaminated soil that becomes spilled on the road, street, or other areas outside the limits of the excavation during loading and/or transporting operations shall be immediately cleaned.

All personnel involved in site disposal activities will follow safety and spill response procedures outlined in the Health and Safety Plan.

3.2 Waste Disposal

Soil waste will be disposed of at Veolia Environmental Services Solid Waste Zion Landfill, 701 Green Bay Road, Zion, Illinois. General solid waste will be disposed of at Waste Management's CID RDF, 138th and Bishop Ford Freeway, Chicago, Illinois.

3.3 Spill Response and Reporting

The following sections briefly describe spill response and reporting. For a more detailed description of these items, please refer to the Spill Response Plan.

3.3.1 Spill Response

The transporter will clean up any spill or release of waste (including soil or water) that occurs during transportation, or take such action as may be required or approved by Federal, State, or local officials. Spilled waste will be immediately cleaned up, including soils on the outside of trucks or containers and on the ground or road surface. Where appropriate, the spilled material (e.g., soil) will be returned to the original waste container or truck. In any case, the spilled material will be properly contained and disposed.

3.3.2 Spill Reporting

In the event of a spill or release of any waste, notification will be provided to the appropriate agencies. The pertinent facts and information about the spill will be reported and recorded, including:

- Type of material (soil, water, etc.)
- Location
- Estimated volume
- Media affected (spilled on asphalt road, gravel road, soil, etc.)
- Time and date of spill or release
- Final disposal of spilled material

The following summarizes required notifications in the event of a spill:

1. ***Immediately*** notify the onsite Safety Coordinator
2. SC notifies the Health & Safety Manager (HSM)
3. HSM notifies the Project Manager, who notifies the client
4. HSM notifies the Legal Department of a serious incident
5. HSM, Environmental Compliance Coordinator (ECC), and client shall determine if the incident is reportable to an agency

The HSM, ECC, and client will determine if reporting is required, and only the designated representative will contact the regulatory agency(ies) to make the report, if it is determined reporting is required. If downstream water quality is likely to be affected, downstream water users should be notified.

The phone numbers listed below may be needed in the event of a release/spill.

National Response Center		1-800-424-8802
Illinois Emergency Management Agency		1-800-782-7860
Illinois Environmental Protection Agency Emergency Response		217-782-3637
Local Emergency Planning Committee: Bill Schatz		312-746-6455
City of Chicago Fire Department Hazardous Materials Chief 558 West DeKoven Street Chicago, Illinois 60607		312-747-6582
Fire Department		911
Alan Jones/MKE	Project Manager	414-272-2426 x467 Cell: 414-379-7809
Jim Mallison/CHI	Safety Coordinator	773-693-3809 Cell: 708-224-1509

Bill Berlett/CHI	Project Health & Safety Manager (HSM)	773-693-3800 x 316 Cell: 847-770-0209 Fax: 773-693-3823
Linda Hickok/VBO	Environmental Compliance Coordinator (ECC)	919-465-2245 Cell: 315-751-3903

3.4 Dust Abatement

A dust abatement program shall be in place continuously during operations. Dust abatement activities shall be performed during excavation, material handling, dumping, and compaction operations. Acceptable performance for dust abatement is essentially no dust in the air.

3.5 Records and Reporting

The following records and documents will be maintained:

- Copies of manifests and/or other haul tickets for each load taken to the disposal facility complete with a signature, date, and time, indicating that the load was received at the facility.
- Transportation and Disposal Log.
- Training records.
- Inspection records.
- Material Safety Data Sheets for chemicals brought onsite.

These documents will be maintained on file at the site office.

3.6 Transportation and Disposal

Transportation of wastes will be inventoried the day of transportation from the site using the Transportation and Disposal Log. A copy of the initial manifest form and other haul ticket, if used, for each load will be retained at the site office.

4.0 Restoration Materials

4.1 Transportation

Shipping documentation will be required for each load of material imported to the site. The shipping documentation will generally describe the contents of the load (backfill, topsoil, gravel), the weight and/or volume, the supplier, and where the load is to be delivered.

Whenever possible, the haul vehicles will use interstate highways or other divided controlled-access highways first, and then in descending order, use United States highways, state routes, county roads, and city streets. This may not necessarily provide the most direct route, but will nonetheless be the order of routes used to travel from supplier locations to the remediated sites.

The quantities (volume or weight) of material delivered to the site will be recorded. Material will be transported by licensed commercial transporters.

4.2 Shipping Documentation

Each load of material will be documented (manifest, haul ticket or other). The shipping documentation will include the following information:

- Transporter information including name, address, contact name, and phone number.
- Supplier information including name, address, contact name, and phone number.
- Site name, including street/mailing address, where material is shipped from.
- Description of material (backfill, topsoil, gravel).
- Quantity of material (volume estimate, weight).
- Date and time truck or container load was picked up or loaded.
- Date and time truck or container load was delivered.
- Daily cumulative load number for each specific truck or container for the day.

4.3 Material Transport

The transporter will observe the following practices when hauling and transporting material:

- Minimize impacts to general public traffic.
- Verify vehicles have been decontaminated prior to use for hauling non-contaminated material (backfill, topsoil, gravel) to remediated sites, if they have been used to transport

contaminated material. The truck tires and exterior of the dump truck body will be swept clean of soil or sand prior to each truck leaving the supplier location and the remediated site.

- Trucks transporting backfill, topsoil, and gravel will be covered with an Illinois Department of Transportation-approved tarpaulin during transport.
- Care will be taken during loading and transporting operations to minimize the potential for spillage and tracking. Material which becomes spilled on the road, street, or other areas outside the limits of the supplier location or remediated sites during loading and/or transporting operations will be immediately cleaned.

4.4 Dust Abatement

A dust abatement program will be in place continuously during hauling operations. Dust abatement activities will be performed during material handling, transportation, dumping, and compaction operations. Acceptable performance for dust abatement is essentially no dust in the air.

4.5 Records/Reporting

The following records and documents shall be provided to CH2M HILL:

- Copies of shipping documentation (manifests, haul tickets, etc.) for each load delivered to remediated sites, complete with a signature, date, and time, indicating that the load was received at the remediated site.
- Transportation Log.
- Inspection records.
- Material Data Safety Sheets for chemicals brought onsite.

Appendix E

APPENDIX E

Storm Water Pollution Prevention Plan

Final

Residential Removal Action Storm Water Pollution Prevention Plan

For Residential Properties Located Near the Former Celotex Site
2800 South Sacramento Avenue
Chicago, Illinois 60623

Prepared for

Honeywell International Inc.

June 2007

CH2MHILL

Table of Contents

Tables

Appendices

Acronyms and Abbreviations

BMP	Best Management Practices
C	Run-off coefficient
USEPA	United States Environmental Protection Agency
MWRD	Metropolitan Water Reclamation District
MSDS	Material Safety Data Sheet
NPDES	National Pollutant Discharge and Elimination System
IEPA	Illinois Environmental Protection Agency
CSSC	Chicago Sanitary and Ship Canal
SWP3	Storm Water Pollution Prevention Plan

1.0 Introduction

This Storm Water Pollution Prevention Plan (SWP3) was developed for residential removal action activities associated with the Celotex Site, Residential Removal Action project, in Cook County, Chicago, Illinois. The SWP3 was developed following the General National Pollutant Discharge Elimination System Permit for Storm Water Discharges from Construction Site Activities for Illinois, as guidance. A copy of this permit (ILR10) is provided in Appendix A.

This SWP3 applies to construction activities at various locations in Cook County, Chicago, Illinois, which are associated with the Celotex Site, Residential Removal Action project. The scope of this SWP3 applies to construction activities performed by CH2M HILL and CH2M HILL's subcontractors, and includes work to be performed on residential properties located in the City of Chicago, in Cook County, Illinois. Maps showing the general locations of these sites are provided in Appendix B.

Pending establishment of an access agreement with Monarch, the primary staging area for construction equipment will be located at the Monarch Asphalt property, 2800 South Sacramento, Chicago, Illinois, in Cook County. The Monarch Asphalt property is a separate, fenced, 2-acre portion of the 20-acre former Celotex Main Site (Main Site). No activity is planned on the Main Site. The United States Geological Survey (USGS) reference for the Main Site indicates that it is situated in the West 1/2 of the Southwest 1/4 of Section 25, Township 39 North, Range 13 East of the Third Prime Meridian on the Englewood 7.5 Minute Quadrangle. A detailed location for the residential properties can be found in the remedial design specifications. The residential properties are located by their street address and are assigned a unique property number.

This plan provides an overview of construction activities and includes procedures that will be implemented during construction activities to prevent or reduce pollutants in storm water discharges. Each of the following elements is addressed:

- Site Description
- A description of control measures or Best Management Practices (BMPs) that will be implemented to control pollutants in storm water discharges
- Procedures for maintaining control measures
- Inspection procedures
- Identification of non-storm water discharges

This plan will be modified when there is a change in design, operation, or maintenance in construction activities. The plan will also be revised if procedures or controls prove to be ineffective in eliminating or significantly minimizing pollutants from potential sources.

2.0 Site Description

This plan is for construction activities related to soil removal at residential properties located near the Celotex Site in Chicago, Illinois.

The Main Site was used for making, storing, and selling asphalt-roofing products. Former operations at the 22-acre Main Site during the approximate period of 1911 to 1989 may have resulted in the release of polycyclic aromatic hydrocarbons (PAHs) to the ground and into the air, thereby potentially impacting surface soil in the vicinity of the Main Site. Residential properties are located north, west and northeast of the Main Site. Facility closure occurred in 1989 and demolition of the Main Site in 1993.

2.1 Description of Construction Activities

Construction activities for this SWP3 will include excavation of PAH-impacted surface soil in residential areas; replacement of excavated soil with clean soil and restoration of the effected areas; and disposal of excavated soil off-site at an approved facility.

2.1.1 Staging Area

Construction activities at the staging area include temporary parking, field trailers, portable sanitary facilities, and laydown of equipment and materials. A gasoline aboveground storage tank (AST) will be located at the staging area with lined and bermed secondary containment. A decontamination area will also be established in the staging area using secondary containment and straw bales to prevent runoff. An entrance and exit road will be constructed and maintained, and dust abatement measures will be in place during operations. The location of the primary staging area and potential additional residential properties to be used as staging areas are shown on figure [B-1] provided in Appendix B. A plan view of the primary staging area is shown on Figure C-1 in Appendix C.

2.1.2 Proposed Removal Action Properties

The construction activities to be completed at residential properties includes clearing and grubbing and excavating soil to a maximum depth of 36 inches. When construction is complete, those portions of individual residential properties impacted by the removal action will be restored to a condition similar to that existing immediately prior to the removal action. . The material removed will be transported to the disposal facility. Dust abatement measures will be in place during property remediation operations. A plan view of property locations is shown on Figure [C-2] provided in Appendix C. Detailed property drawings are available in the remedial design specifications.

2.1.3 Potential Sources of Contamination from Construction Activities

The potential sources of pollutants that could be discharged in storm water during construction activities include:

- Vehicle and equipment fueling
- Vehicle and equipment decontamination areas
- Loading and unloading areas
- Vehicle and equipment maintenance areas
- Excavation and deposition areas
- Soil stockpile areas
- Waste and material storage areas

2.2 Affected Area of the Sites

The residential properties are described separate of the staging area because no excavation is planned for the staging area. However, for the purposes of this SWP3, the staging area and residential properties disturbed with soil removal areas are considered a cumulative whole for the project.

2.2.1 Staging Area

The staging area encompasses an area of approximately 2 acres, of which, varying acreage will be disturbed at any given time. The disturbed area includes the area for temporary parking, field trailers, portable sanitary facilities, laydown of equipment and materials, and the entrance and exit road. A gasoline aboveground storage tank (AST) will be located at the staging area with lined and bermed secondary containment. A decontamination area will also be established in the staging area using secondary containment and straw bales to prevent runoff. Upon the completion of removal action at the residential properties, the staging area will be reshaped and vegetated.

2.2.2 Residential Properties

The combined area of the residential properties encompasses numerous acres, with the potential of up to 178 residential properties to requiring removal action. However, only a few properties will be disturbed at a time, and the disturbed area will be kept to a few acres.

2.3 Runoff Coefficient

The runoff coefficient (C) is the percentage of precipitation volume that will not be absorbed by the ground surface. This is influenced by the type of ground cover, the type of soil, and the slope of the terrain. For example, 90 percent of the precipitation that falls on a paved (impervious) surface runs off into nearby drainage. The less precipitation that infiltrates into the ground, the higher the C value. The staging area and remediation properties weighted C values are determined in the following sections. Runoff coefficients were calculated using

typical C values from *Hydrologic Analysis and Design, by Richard H. McCuen, 1989* and the Metropolitan Water Reclamation District of Greater Chicago.

2.3.1 Staging Area

The pre-construction weighted runoff coefficient for the staging area is:

Type of Cover	% of Area Covered	Typical C Value	Weighted C Value
Undeveloped	25	.15	.0375
Gravel	75	.75	.5625
		Weighted C =	.60

Soil at the staging area is generally composed of gravel with some scattered grass and brush growing up through the gravel. The area has a few small trees around the perimeter of the property. The estimated C value after construction is complete is .60, since the area will be, at a minimum, restored to its original ground cover condition, and the same general sloping will be maintained.

2.3.2 Residential Properties

The average pre-construction weighted runoff coefficient for the residential properties is:

Type of Cover	% of Area Covered	Typical C Value	Weighted C Value
Residential Lot, 1/8 acre	100	.40	.40
		Weighted C =	.40

Soil at the residential properties is generally fair draining soils. The properties are covered with grass, brush, trees, and gravel. The estimated C value after construction is complete is .40, since the properties will be, at a minimum, restored to their original ground cover conditions, and the same general topography will be maintained.

2.4 Site Map

A figure showing the location of the staging area and residential properties is provided as Figure B-1 in Appendix B. Figure B-1 illustrates the streams and tributaries, and general drainage patterns. Drawings of the staging area and a typical residential property (Appendix C) illustrate other features and include the following, as necessary:

- Construction site boundaries
- Areas of soil disturbance
- Areas that will not be disturbed
- Approximate slopes after major grading
- Locations of major structural and non-structural controls

- Locations where stabilization practices are expected to occur
- Springs, streams, wetlands, and other surface waters
- Storm water discharges
- 100 year flood plain, if determined
- Storage area locations (equipment, supplies, waste, stockpiles, etc.)

Drawings for the individual residential properties are available in the remedial design specifications. The map and drawings will be updated to reflect any warranted changes or additions. Inspections may reveal necessary revisions and the map and drawings may be manually updated.

2.5 Topography

Topography in this area is generally flat plains with some areas of very gentle relief.

2.6 Area and Site Surface Waters

The Collater Channel, which is a tributary to the Chicago Sanitary and Ship Canal (CSSC), is located approximately 200 feet south of the staging area across 31st Street. The Collater Channel is a north-south slip, approximately 1,500 feet long and 130 feet wide. It empties into the CSSC.

The storm water from the staging area and residential properties enters the City of Chicago's combined sanitary and storm water collection system. The combined sanitary and storm water is treated by the Metropolitan Water Reclamation District (MWRD) of Greater Chicago.

2.7 Endangered/Threatened Species

There are no known endangered/threatened species at the staging area or residential properties locations.

2.8 Historic Preservation

There are no known historic properties or places at the staging area or residential property locations.

3.0 Best Management Practices for Storm Water Pollution Prevention

CH2M HILL will implement the Best Management Practices (BMPs) described below to prevent and control storm water run-on and run-off during construction activities at the staging area and residential properties. The description of controls includes:

- Control measures for potential pollutant sources
- Erosion and sediment controls, including structural and stabilization controls
- Material handling
- Spill prevention, control, and response
- Measures to protect endangered/threatened species
- Measures to protect Historic Places

3.1 Control Measures for Pollutant Sources during Construction Activities

The potential pollutant sources were described previously in Section 2.1.3. Specific measures to control pollutant discharges from these sources include:

- **Vehicle and Equipment Fueling Areas:** All fueling stations will have temporary secondary containment around the fuel tanks.
- **Vehicle and Equipment Decontamination Areas:** Vehicles and equipment will be cleaned of material prior to leaving the residential properties. A temporary decontamination area will be established, as necessary, and located within the construction site. If liquid decontamination is necessary, the liquids and solids generated will be contained, collected, sampled, and disposed at an approved disposal facility.
- **Loading and Unloading Areas:** Any soils or other materials spilled during loading or unloading will be cleaned up immediately. This includes soils on the outside of trucks (side rails), ground, and road surfaces.
- **Vehicle and Equipment Maintenance Areas:** If vehicle or equipment maintenance is necessary, it will be performed in an area designated for this purpose. Any spills will be cleaned up immediately. Precautions will be taken to prevent the release of pollutants to the environment from vehicle and equipment maintenance. Precautions will include the use of drip pans, mats, and other similar methods. No vehicle wash water will be allowed to run off the construction site or enter waters of the state.
- **Excavation and Deposition Areas:** To prevent the mobilization of pollutants in storm water runoff from excavation and deposition areas, BMPs described in the Erosion and Sediment Control section will be implemented.
  - Geotextile fabric may be placed over storm sewer inlets in areas where construction is being conducted. The geotextile fabric for use in inlet protection shall be nonwoven fabric consisting of continuous chain polymer filaments, formed into a

stable network by needle punching. The inlet filter material will be cleaned every storm event or as needed.

- **Soil Stockpile Areas:** In general, stockpiles are managed in the following manner:
  - Stockpiles of soil are placed on plastic sheeting near the excavation and within the disturbed area.
  - When precipitation is forecast, stockpiles of soil will be provided with a liner, cover, and perimeter berm to prevent run-on, run-off, and infiltration of precipitation. Typically, liners and covers are 6 mil polyethylene and berms are typically hay bales placed beneath the liner.
  - Covers and perimeter berms will be secured in place when not in use and at the end of each workday, or as necessary to prevent wind dispersion or runoff from major precipitation events.
- **Waste and Material Storage Areas:** Materials on the sites will be stored in areas designated for that purpose. Suitable measures will be taken in these areas to reduce the likelihood of a discharge. For example, when practicable, materials will be sheltered from rainfall.
- **Offsite Vehicle Tracking:** Sediment and the generation of dust shall be minimized.

3.2 Erosion and Sediment Controls

Construction activities will be implemented to attain the following goals and criteria, as applicable:

- Implement erosion and sediment controls during construction to retain sediment onsite to the extent practicable.
- Select, install, and maintain control measures in accordance with manufacturer's specifications and good engineering practices. If periodic inspections or other information indicate that a control measure has been used inappropriately or incorrectly, that control measure will be modified or replaced, as necessary.
- In the event that sediment escapes the construction site, remove offsite accumulations of sediment to minimize offsite impacts.
- Implement construction practices that prevent litter, construction debris, and chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
- Erosion and sediment runoff is controlled through the use of structural and / or stabilization practices. Structural control practices may include the use of straw bales, silt fence, earth dikes, drainage swales, sediment traps, sediment basins, etc. Stabilization practices may include temporary or permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, etc.

Table 3-1 lists several structural and stabilization measures that may be used to control the quality of the storm water coming off the construction sites.

TABLE 3-1

Structural and Stabilization Measures

Former Celotex Site Residential Removal Action – Chicago, Illinois

Control Measure	Location	Description of Control Measure[1]
Silt Fence	Along the perimeter of the construction sites.	To protect streams or wetland areas, to prevent erosion, and to keep sediment onsite. Silt fence consists of posts with filter fabric stretched across the posts. The lower end of the fence fabric is anchored or vertically trenched and covered with backfill. This prevents water from passing by the fence without first being filtered. The fabric allows for the water to pass offsite while retaining the sediment onsite.
Straw Bales	Around areas requiring protection, such as streams, and to form a temporary containment.	Straw bales work much like silt fence and may be used instead of silt fence. They can be used to form a barrier or redirect water. They impede storm water flow. Unlike silt fence, straw bales do not allow water to flow through freely, thus they are used where detention, not just filtration, is necessary.
Limit Entrance/Exit	Designated construction site entrances/exits. Exact location is determined in the field.	The purpose is to reduce tracking of soil off the site. These entrances/exits are usually constructed of fabric and large stone. The fabric is laid down on the soil and the rock is then placed on the fabric. The rough surface will shake and pull the soil from tires.
Temporary Seeding	Disturbed areas where the construction activity has temporarily ceased for more than 21 days. Seeding is to be implemented within 14 days of activity ceasing.	Growing of a short-term vegetative cover on disturbed areas that may be in danger of erosion.
Mulching	On slopes steeper than 2:1 or on areas that have been seeded. Must be implemented within 14 days of activity ceasing.	Temporary soil stabilization or erosion control practices where materials, such as, grass, wood chips, hay, etc. are placed on the soil surface.
Preservation of Natural Vegetation	Wherever practical.	Wherever possible, existing vegetation should be retained. It minimizes erosion potential and protects water quality. The preservation of natural vegetation between the silt fence and stream will provide additional water quality improvement prior to the storm water entering State or U.S. waters.
Permanent Seeding or Sod	On appropriate disturbed areas once construction is complete and within 14 days.	Provides permanent stabilization to the soil and reduces erosion.

[1] There are no identified streams or wetland areas located near the removal action area.

3.3 Material Handling

The following material handling procedures will be implemented during construction activities:

- Waste containers (solid and liquid) will be emptied frequently enough to prevent them from overflowing. The area will be kept free of trash and spills. Liquid waste containers, such as waste oil, will have secondary containment.
- Trash receptacles will be equipped with covers.
- Storage containers (drums, bags, etc.) will be stored away from traffic to prevent accidental spills.
- Containers will be kept closed, except to add or remove material, as necessary.
- Containers will be stored in such a manner to prevent corrosion that could result from contact between the container and the ground, resulting in a release.
- Containers will be labeled to show name and type of substance, health hazards, and other appropriate information.
- Material Safety Data Sheets (MSDS) for substances used or stored onsite will be available for review and use.

Materials stored onsite shall be inventoried on the form provided in Appendix E and records of the inventories will be maintained at the CH2M HILL field office.

3.4 Spill Prevention, Control, and Response

The following procedures shall be followed for the prevention and mitigation of minor spills and releases during construction activities.

Incidental spills and releases are considered small spills (not reportable). CH2M HILL and CH2M HILL's subcontractors shall respond to all minor spills as soon as practicable. CH2M HILL and CH2M HILL's subcontractors shall respond to medium or large spills (reportable quantities or larger), according to the project Spill Response Plan and the Emergency Response Plan contained in the Health and Safety Plan. These plans are maintained at the field office.

General spill prevention procedures follow:

- Fuel and waste containers/tanks shall be bermed or otherwise contained to prevent releases. The bermed volume shall be equal to the full capacity of the container(s)/tank(s). When practicable, for areas on soil, the area inside the berm will be covered with an oil resistant membrane to minimize soil contamination in the event of a spill. Additionally, if practicable, these areas will be sheltered from precipitation to prevent overflow of the bermed volumes.
- Fueling operations and vehicle/equipment maintenance shall be performed at designated facilities, when practical.
- Drip pans and tarpaulins will be used during maintenance and fueling to capture minor spills and leaks during fueling and maintenance.

- Each location having fueling operations, fuel containers/tanks, and/or waste container/tanks shall have a sufficient number of spill kits to contain minor spills and leaks.
- For detailed spill response procedures, refer to the Spill Response Plan. The general procedures for spill response are as follows:
  - Assure personal safety, and then evaluate the area and nature of the spill.
  - Identify the source and stop the flow of pollutants, if it can be done safely.
  - Contain the spill with absorbent materials or by berming the area.
  - Remove and contain the spilled material, contaminated media, and cleanup material, and transport to the designated location for collection of such material.
  - Contact the appropriate personnel listed in the Spill Response Plan.
  - Record pertinent facts.

3.5 Measures to Protect Endangered/Threatened Species

There are no endangered species identified in the removal action area. If endangered species and/or critical habitats are found on or near these sites, work will be stopped and the situation evaluated.

3.6 Measures to Protect Historic Places

There are no historic places identified in the removal action area. If historic places are found on or near these sites, work will be stopped and the situation evaluated.

3.7 Other Controls

3.7.1 Employee Training

Appropriate CH2M HILL and CH2M HILL subcontractor personnel will be trained and aware of the SWP3 requirements and measures that will need to be implemented. Additionally, CH2M HILL's subcontractors will be responsible for their lower tier subcontractor(s) being trained and aware of the requirements and measures to be implemented under the SWP3.

3.7.2 General Controls

The following general erosion control requirements shall be implemented during construction activities:

- Where practical, re-seed or re-sod as directed, all disturbed soil areas with temporary seed or permanent sod after construction activities are either temporarily or permanently stopped.
- Minimize the time that bare soil is exposed before stabilization.

- Minimize the disturbance of existing vegetation.
- Prevent solid materials, oils, greases, etc. from discharging into waters of the State and U.S.

4.0 Maintenance

All erosion and sediment control measures and other protection measures will be maintained in effective operating condition. Maintenance will be performed on an "as-needed" basis. Specific maintenance requirements include, but are not limited to:

- Removal of sediment and other debris collected behind silt fence or straw bales.
- Gravel and sediment shall be removed from construction entrances/exits and replaced with new gravel whenever 50 percent or more of the void space appears filled with sediment, based on visual inspection.

5.0 Inspections

Inspections will be performed to review the areas for evidence of, or the potential for, pollutants leaving the site. The controls identified in Section 3 will be inspected to verify they are being implemented properly.

As necessary, the SWP3 will be revised to incorporate any changes that come about as a result of the inspection. Changes that affect the description of pollutant sources or the pollution prevention control measures will be made to the SWP3 within 7 days of the inspection. A record of the inspections will be maintained at the CH2M HILL field office as part of the SWP3.

5.1 Requirements During Construction

The following areas will be inspected at a minimum, every 14 days, and within 24 hours of the end of a storm event of 0.5 inches or greater:

- Disturbed areas that have not been finally stabilized
- Storage areas that are exposed to precipitation
- Structural control measures
- Construction entrances/exits

Inspections shall be the responsibility of and performed by CH2M HILL and/or CH2M HILL's subcontractors. Inspections will be recorded on the SWP3 Inspection Checklist, provided in Appendix D. A copy of the detailed area drawings will be used during inspections and will be manually updated during inspections, as necessary, to reflect any changes or additions to the following features:

- Construction site boundaries
- Areas of soil disturbance
- Areas which will not be disturbed
- Approximate slopes after major grading
- Areas used for storage of materials, soil, or waste
- Locations of major erosion control features/structures (silt fence, straw bales, etc.)
- Springs, streams, wetlands, and other surface waters
- Storm water discharge locations

The updated drawings and Inspection Checklists will be maintained at the CH2M HILL field office. Table 5-1 provides storm water BMP inspection/maintenance guidelines.

TABLE 5-1
Storm Water Inspection/Maintenance Guidelines
Former Celotex Site Residential Removal Action – Chicago, Illinois

EROSION CONTROL BLANKET

- Is fabric damaged, loose, or need repairs?

MULCHING

- Distributed uniformly?
- Any evidence of mulch being blown or washed away?

SILT FENCE

- Is the fence damaged, collapsed, or ineffective?
- Has sediment been removed from behind fence?
- Is the silt fence properly installed and positioned?

STRAW BALES

- Are the straw bales damaged or deteriorated, or ineffective?
- Has sediment been removed from behind the bales?
- Are the bales installed and positioned correctly?

TEMPORARY SEEDING

- Is the seeding protected by mulch?
- Has any erosion occurred in the seeded area?
- Any evidence of vehicle tracking on seeded areas?

VEHICLE TRACKING

- Is the gravel surface clogged with mud or sediment?
- Is the gravel surface sinking into the ground?
- Has sediment been tracked onto public roads, has it been cleaned up?

5.2 Requirements Prior to Final Stabilization

Inspections will be reduced to once per month after construction activities are complete, but before vegetation cover has been fully established (70 percent of pre-construction coverage). A record of these inspections will be maintained at the CH2M HILL field office.

6.0 Non-Storm Water Discharges

No discharges other than storm water from construction activities is anticipated. However, the following discharges are allowable:

- Fire fighting activities
- Fire hydrant flushing
- Vehicle wash water (where detergents are not used)
- Water used to control dust
- Potable water sources (includes waterline flushing)
- External building washdown (which does not use detergents)
- Pavement washdown (where spills or leaks of toxic or hazardous materials have not occurred and where detergents are not used)
- Air conditioning condensate
- Uncontaminated groundwater or spring water
- Foundation or footing drains (where flows are not contaminated with process materials, such as solvents)

7.0 Contractor Certification

The Contractor Certification forms signed by CH2M HILL's subcontractors are provided in Appendix F.

8.0 Retention of Records

A copy of this SWP3 and all inspection reports are required to be maintained at the CH2M HILL field office during the duration of the construction period, project initiation through final stabilization. The SWP3, inspection records, and reports shall be retained for a period of at least 3 years from the date the areas are finally stabilized.

APPENDIX A

National Pollutant Discharge Elimination System General Permit (ILR10) for Storm Water Discharges from Construction Activity

General NPDES Permit No. ILR10

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
www.epa.state.il.us

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

General NPDES Permit
For
Storm Water Discharges From Construction Site Activities

Expiration Date: May 31, 2008

Issue Date: May 30, 2003

Effective Date: June 1, 2003

In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter I), and the Clean Water Act, and the regulations thereunder the following discharges are authorized by this permit, in accordance with the conditions and attachments herein:

Permit Signed May 30, 2003

Toby Frevert, P.E.
Manager
Division of Water Pollution Control

Part I. COVERAGE UNDER THIS PERMIT

A. **Permit Area**. The permit covers all areas of the State of Illinois with discharges to any waters of the State.

B. **Eligibility**.

1. This permit shall authorize all discharges of storm water associated with industrial activity from construction sites that will result in the disturbance of one or more acres total land area, construction sites less than one acre of total land that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb one or more acres total land area or construction sites that are designated by the Agency that have the potential for contribution to a violation of water quality standard or significant contribution of pollutants to waters of the State, occurring after the effective date of this permit (including discharges occurring after the effective date of this permit where the construction activity was initiated before the effective date of this permit), except for discharges identified under paragraph I.B.3 (Limitations on Coverage).

2. This permit may only authorize a storm water discharge associated with industrial activity from a construction site that is mixed with a storm water discharge from an industrial source other than construction, where:

   a. the industrial source other than construction is located on the same site as the construction activity;

   b. storm water discharges associated with industrial activity from the areas of the site where construction activities are occurring are in compliance with the terms of this permit; and

   c. storm water discharges associated with industrial activity from the areas of the site where industrial activity other than construction are occurring (including storm water discharges from dedicated asphalt plants and dedicated concrete plants) are covered by a different NPDES general permit or individual permit authorizing such discharges.

3. **Limitations on Coverage**. The following storm water discharges from construction sites are not authorized by this permit:

   a. storm water discharges associated with industrial activity that originate from the site after construction activities have been completed and the site has undergone final stabilization;

   b. discharges that are mixed with sources of non-storm water other than discharges identified in Part III.A (Prohibition on Non-Storm Water Discharges) of this permit and in compliance with paragraph IV.D.5 (Non-Storm Water Discharges) of this permit;

   c. storm water discharges associated with industrial activity that are subject to an existing NPDES individual or general permit or which are issued a permit in accordance with Part VI.N (Requiring an Individual Permit or an Alternative General Permit) of this permit. Such discharges may be authorized under this permit after an existing permit expires provided the existing permit did not establish numeric limitations for such discharges;

d. storm water discharges from construction sites that the Agency has determined to be or may reasonably be expected to be contributing to a violation of a water quality standard; and

e. Storm water discharges that the Agency, at its discretion, determines are not appropriately authorized or controlled by this general permit.

f. Storm water discharges to any receiving water identified under 35 Ill. Adm. Code 302.105(d)(6).

C. **Authorization.**

1. In order for storm water discharges from construction sites to be authorized to discharge under this general permit a discharger must submit a Notice of Intent (NOI) in accordance with the requirements of Part II below, using an NOI form provided by the Agency, or be covered by a valid Illinois General NPDES Construction Site Activities Permit.

2. Where a new operator (contractor) is selected after the submittal of an NOI under Part II below, a new Notice of Intent (NOI) must be submitted by the owner in accordance with Part II.

3. For projects that have complied with State law on historic preservation and endangered species prior to submittal of the NOI, through coordination with the Illinois Historic Preservation Agency and the Illinois Department of Natural Resources or through fulfillment of the terms of interagency agreements with those agencies, the NOI shall indicate that such compliance has occurred.

Unless notified by the Agency to the contrary, dischargers who submit an NOI in accordance with the requirements of this permit are authorized to discharge storm water from construction sites under the terms and conditions of this permit in 30 days after the date the NOI is post marked.

The Agency may deny coverage under this permit and require submittal of an application for an individual NPDES permit based on a review of the NOI or other information.

Part II. NOTICE OF INTENT REQUIREMENTS

A. **Deadlines for Notification.**

1. To receive authorization under this general permit, a discharge must either be covered by a valid Illinois General NPDES Construction Site Permit, or a completed Notice of Intent (NOI) in accordance with Part VI.G (Signatory Requirements) and the requirements of this part must be submitted prior to the commencement of construction. The NOI must be submitted at least 30 days prior to the commencement of construction.

2. Discharges that are covered by a valid Illinois General NPDES Construction Site Activities Permit as of May 31, 2003 are automatically covered by this permit.

3. A discharger may submit an NOI in accordance with the requirements of this part after the start of construction. In such instances, the Agency may bring an enforcement action for any discharges of storm water associated with industrial activity from a construction site that have occurred on or after the start of construction.

B. **Failure to Notify.** Dischargers who fail to notify the Agency of their intent to be covered, and discharge storm water associated with construction site activity to Waters of the State without an NPDES permit, are in violation of the Environmental Protection Act and Clean Water Act.

C. **Contents of Notice of Intent.** The Notice of Intent shall be signed in accordance with Part VI.G (Signatory Requirements) of this permit by all of the entities identified in paragraph 2 below and shall include the following information:

1. The mailing address, and location of the construction site for which the notification is submitted. Where a mailing address for the site is not available, the location can be described in terms of the latitude and longitude of the approximate center of the facility to the nearest 15 seconds, or the nearest quarter section (if the section, township and range is provided) that the construction site is located in;

2. The owner's name, address, telephone number, and status as Federal, State, private, public or other entity;

3. The name, address and telephone number of the general contractor(s) that have been identified at the time of the NOI submittal;

4. The name of the receiving water(s), or if the discharge is through a municipal separate storm sewer, the name of the municipal operator of the storm sewer and the ultimate receiving water(s);

5. The number of any NPDES permit for any discharge (including non-storm water discharges) from the site that is currently authorized by an NPDES permit;

6. A yes or no indication of whether the owner or operator has existing quantitative data which describes the concentration of pollutants in storm water discharges (existing data should not be included as part of the NOI); and

7. A brief description of the project, estimated timetable for major activities, estimates of the number of acres of the site on which soil will be disturbed, and a certification that a storm water pollution prevention plan has been or will be prepared for the facility in accordance with Part IV of this permit prior to the start of construction, and such plan provides compliance with local sediment and erosion plans or permits and/or storm water management plans or permits in accordance with paragraph VI.G.1 (Signatory Requirements) of this permit. **(A copy of the plans or permits <u>should not</u> be included with the NOI submission).**

D. **Where to Submit.**

1. Facilities which discharge storm water associated with construction site activity must use an NOI form provided by the Agency. NOIs must be signed in accordance with Part VI.G (Signatory Requirements) of this permit. NOIs are to be submitted certified mail to the Agency at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Attention: Permit Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

2. A copy of the letter of notification of coverage or other indication that storm water discharges from the site are covered under an NPDES permit shall be posted at the site in a prominent place for public viewing (such as alongside a building permit).

E. **Additional Notification**. Facilities which are operating under approved local sediment and erosion plans, grading plans, or storm water management plans, in addition to filing copies of the Notice of Intent in accordance with Part D above, shall also submit signed copies of the Notice of Intent to the local agency approving such plans in accordance with the deadlines in Part A above. See Part IV.D.2.d (Approved State or Local Plans).

F. **Notice of Termination**. Where a site has been finally stabilized and all storm water discharges from construction sites that are authorized by this permit are eliminated, the permittee of the facility must submit a completed Notice of Termination that is signed in accordance with Part VI.G (Signatory Requirements) of this permit.

1. The Notice of Termination shall include the following information:

   a. The mailing address, and location of the construction site for which the notification is submitted. Where a mailing address for the site is not available, the location can be described in terms of the latitude and longitude of the approximate center of the facility to the nearest 15 seconds, or the nearest quarter section (if the section, township and range is provided) that the construction site is located in;

   b. The owner's name, address, telephone number, and status as Federal, State, private, public or other entity;

   c. The name, address and telephone number of the general contractor(s); and

   d. The following certification signed in accordance with Part VI.G (Signatory Requirements) of this permit:

      "I certify under penalty of law that all storm water discharges associated with construction site activity from the identified facility that are authorized by NPDES general permit ILR10 have otherwise been eliminated. I understand that by submitting this notice of termination, that I am no longer authorized to discharge storm water associated with construction site activity by the general permit, and that discharging pollutants in storm water associated with construction site activity to Waters of the State is unlawful under the Environmental Protection Act and Clean Water Act where the discharge is not authorized by a NPDES permit. I also understand that the submittal of this notice of termination does not release an operator from liability for any violations of this permit or the Clean Water Act."

      For the purposes of this certification, elimination of storm water discharges associated with industrial activity means that all disturbed soils at the identified facility have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time, or that all storm water discharges associated with construction activities from the identified site that are authorized by a NPDES general permit have otherwise been eliminated.

2. All Notices of Termination are to be sent, using the form provided by the Agency, to the address in paragraph II.D.1.

Part III. SPECIAL CONDITIONS, MANAGEMENT PRACTICES, AND OTHER NON-NUMERIC LIMITATIONS

A. **Prohibition on Non-Storm Water Discharges**.

1. Except as provided in paragraph I.B.2 and 2 below, all discharges covered by this permit shall be composed entirely of storm water.

2. a. Except as provided in paragraph b below, discharges of materials other than storm water must be in compliance with a NPDES permit (other than this permit) issued for the discharge.

   b. The following non-storm water discharges may be authorized by this permit provided the non-storm water component of the discharges is in compliance with paragraph IV.D.5 (Non-Storm Water Discharges): discharges from fire fighting activities; fire hydrant flushings; waters used to wash vehicles where detergents are not used; waters used to control dust; potable water sources including uncontaminated waterline flushings; irrigation drainages; routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

B. Discharges into Receiving Waters With an Approved Total Maximum Daily Load (TMDL):

Discharges to waters for which there is a TMDL allocation for sediment or a parameter that addressed sediment (such as total suspended solids, turbidity, or siltation) are not eligible for coverage under this permit unless you develop and certify a SWPPP that is consistent with the assumptions and requirements in the approved TMDL. To be eligible for coverage under this general permit, operators must incorporate into their SWPPP any conditions applicable to their discharges necessary for consistency with the assumptions and requirements of the TMDL within any timeframes established in the TMDL. If a specific numeric wasteload allocation has been established that would apply to the project's discharges, the operator must incorporate that allocation into its SWPPP and implement necessary steps to meet that allocation.

C. Discharges covered by this permit, alone or in combination with other sources, shall not cause or contribute to a violation of any applicable water quality standard.

Part IV. STORM WATER POLLUTION PREVENTION PLANS

A storm water pollution prevention plan shall be developed for each construction site covered by this permit. Storm water pollution prevention plans shall be prepared in accordance with good engineering practices. The plan shall identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges associated with construction site activity from the facility. In addition, the plan shall describe and ensure the implementation of practices which will be used to reduce the pollutants in storm water discharges associated with construction site activity and to assure compliance with the terms and conditions of this permit. Facilities must implement the provisions of the storm water pollution prevention plan required under this part as a condition of this permit.

A. **Deadlines for Plan Preparation and Compliance.**

The plan shall:

1. Be completed prior to the start of the construction to be covered under this permit and updated as appropriate; and

2. Provide for compliance with the terms and schedule of the plan beginning with the initiation of construction activities.

B. **Signature, Plan Review and Notification.**

1. The plan shall be signed in accordance with Part VI.G (Signatory Requirements), and be retained on-site at the facility which generates the storm water discharge in accordance with Part VI.E (Duty to Provide Information) of this permit.

2. Prior to commencement of construction, the permittee shall provide written notification to the Agency of completion of the SWPPP and that said plan is available at the site.

3. The permittee shall make plans available upon request from this Agency or a local agency approving sediment and erosion plans, grading plans, or storm water management plans; or in the case of a storm water discharge associated with industrial activity which discharges through a municipal separate storm sewer system with an NPDES permit, to the municipal operator of the system.

4. The Agency may notify the permittee at any time that the plan does not meet one or more of the minimum requirements of this Part. Such notification shall identify those provisions of the permit which are not being met by the plan, and identify which provisions of the plan requires modifications in order to meet the minimum requirements of this part. Within 7 days from receipt of notification from the Agency, the permittee shall make the required changes to the plan and shall submit to the Agency a written certification that the requested changes have been made. Failure to comply shall terminate authorization under this permit.

5. All storm water pollution prevention plans required under this permit are considered reports that shall be available to the public at any reasonable time upon request. However, the permittee may claim any portion of a storm water pollution prevention plan as confidential in accordance with 40 CFR Part 2.

C. **Keeping Plans Current**. The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the Waters of the State and which has not otherwise been addressed in the plan or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified under paragraph D.2 below, or in otherwise achieving the general objectives of controlling pollutants in storm water discharges associated with construction site activity. In addition, the plan shall be amended to identify any new contractor and/or subcontractor that will implement a measure of the storm water pollution prevention plan. Amendments to the plan may be reviewed by the Agency in the same manner as Part IV.B above.

D. **Contents of Plan**. The storm water pollution prevention plan shall include the following items:

1. **Site Description**. Each plan shall, provide a description of the following:

   a. A description of the nature of the construction activity;

   b. A description of the intended sequence of major activities which disturb soils for major portions of the site (e.g. grubbing, excavation, grading);

   c. Estimates of the total area of the site and the total area of the site that is expected to be disturbed by excavation, grading, or other activities;

   d. An estimate of the runoff coefficient of the site after construction activities are completed and existing data describing the soil or the quality of any discharge from the site;

   e. A site map indicating drainage patterns and approximate slopes anticipated before and after major grading activities, locations where vehicles enter or exit the site and controls to prevent offsite sediment tracking, areas of soil disturbance, the location of major structural and nonstructural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands), and locations where storm water is discharged to a surface water; and

   f. The name of the receiving water(s) and the ultimate receiving water(s), and areal extent of wetland acreage at the site.

2. **Controls**. Each plan shall include a description of appropriate controls that will be implemented at the construction site. The plan will clearly describe for each major activity identified in paragraph D.1 above, appropriate controls and the timing during the construction process that the controls will be implemented. (For example, perimeter controls for one portion of the site will be installed after the clearing and grubbing necessary for installation of the measure, but before the clearing and grubbing for the remaining portions of the site. Perimeter controls will be actively maintained until final stabilization of those portions of the site upward of the perimeter control. Temporary perimeter controls will be removed after final stabilization). The description of controls shall address as appropriate the following minimum components:

a. **Erosion and Sediment Controls**.

(i) **Stabilization Practices**. A description of interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices. Site plans should ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized. Stabilization practices may include: temporary seeding, permanent seeding, mulching, geotextiles, soc stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be included in the plan. Except as provided in paragraphs (A) and (B) below, stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.

(A) Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.

(B) Where construction activity will resume on a portion of the site within 21 days from when activities ceased, (e.g. the total time period that construction activity is temporarily ceased is less than 21 days) then stabilization measures do not have to be initiated on that portion of site by the 14th day after construction activity temporarily ceased.

(ii) **Structural Practices**. A description of structural practices to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. Structural practices should be placed on upland soils to the degree attainable. The installation of these devices may be subject to Section 404 of the CWA.

(iii) **Best Management Practices for Impaired Waters**. For any site which discharges directly to an impaired water identified in the Agency's 303(d) listing for suspended solids, turbidity, or siltation the storm water pollution prevention plan shall be designed for a storm event equal to or greater than a 25-year 24-hour rainfall event. If required by federal regulations or the Illinois Environmental Protection Agency's Illinois Urban Manual, the storm water pollution prevention plan shall adhere to a more restrictive design criteria.

b. **Storm Water Management**. A description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. Structural measures should be placed on upland soils to the degree attainable. The installation of these devices may be subject to Section 404 of the CWA. This permit only addresses the installation of storm water management measures, and not the ultimate operation and maintenance of such structures after the construction activities have been completed and the site has undergone final stabilization. Permittees are responsible for only the installation and maintenance of storm water management measures prior to final stabilization of the site, and are not responsible for maintenance after storm water discharges associated with industrial activity have been eliminated from the site.

(i) Such practices may include: storm water detention structures (including wet ponds); storm water retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices). The pollution prevention plan shall include an explanation of the technical basis used to select the practices to control pollution where flows exceed predevelopment levels.

(ii) Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g. maintenance of hydrologic conditions, such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

(iii) Unless otherwise specified in the Illinois Environmental Protection Agency's Illinois Urban Manual, the storm water pollution prevention plan shall be designed for a storm event equal to or greater than a 25-year 24-hour rainfall event.

c. **Other Controls**.

(i) **Waste Disposal**. No solid materials, including building materials, shall be discharged to Waters of the State, except as authorized by a Section 404 permit.

(ii) The plan shall ensure and demonstrate compliance with applicable State and/or local waste disposal, sanitary sewer or septic system regulations.

d. **Approved State or Local Plans**.

(i) The management practices, controls and other provisions contained in the storm water pollution prevention plan must be at least as protective as the requirements contained in Illinois Environmental Protection Agency's Illinois Urban Manual, 2002. Facilities which discharge storm water associated with construction site activities must include in their storm water pollution prevention plan procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials. Requirements specified in sediment and erosion site plans or site permits or storm water management site plans or site permits approved by local officials that are applicable to protecting surface water resources are, upon submittal of an NOI to be authorized to discharge under this permit, incorporated by reference and are enforceable under this permit even if they are not specifically included in a storm water pollution prevention plan required under this permit. This provision does not apply to provisions of master plans, comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit that is issued for the construction site.

(ii) Dischargers seeking alternative permit requirements are not authorized by this permit and shall submit an individual permit application in accordance with 40 CFR 122.26 at the address indicated in Part II.D (Where to Submit) of this permit, along with a description of why requirements in approved local plans or permits should not be applicable as a condition of an NPDES permit.

3. **Maintenance**. A description of procedures to maintain in good and effective operating conditions vegetation, erosion and sediment control measures and other protective measures identified in the site plan.

4. **Inspections**. Qualified personnel (provided by the permittee) shall inspect disturbed areas of the construction site that have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site at least once every seven calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater or equivalent snowfall. Qualified personnel means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed professional engineer or other knowledgeable person who possesses the skills to assess conditions at the construction site that could impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of storm water discharges from the construction activities.

   a. Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking.

   b. Based on the results of the inspection, the description of potential pollutant sources identified in the plan in accordance with paragraph IV.D.1 (Site Description) of this permit and pollution prevention measures identified in the plan in accordance with paragraph IV.D.2 (Controls) of this permit shall be revised as appropriate as soon as practicable after such inspection. Such modifications shall provide for timely implementation of any changes to the plan within 7 calendar days following the inspection.

   c. A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with paragraph b above shall be made and retained as part of the storm water pollution prevention plan for at least three years from the date that the permit coverage expires or is terminated. The report shall be signed in accordance with Part VI.G (Signatory Requirements) of this permit.

   d. The permittee shall complete and submit within 5 days an "Incidence of Noncompliance" (ION) report for any violation of the storm water pollution prevention plan observed during an inspection conducted, including those not required by the Plan. Submission shall be on forms provided by the Agency and include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance.

   e. All reports of noncompliance shall be signed by a responsible authority as defined in Part VI.G (Signatory Requirements).

   f. All reports of noncompliance shall be mailed to the Agency at the following address:

      Illinois Environmental Protection Agency
      Division of Water Pollution Control
      Compliance Assurance Section
      1021 North Grand Avenue East
      Post Office Box 19276
      Springfield, Illinois 62794-9276

5. **Non-Storm Water Discharges** - Except for flows from fire fighting activities, sources of non-storm water listed in paragraph III.A.2 of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and insure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

E. **Additional requirements for storm water discharge from industrial activities other than construction, including dedicated asphalt plants, and dedicated concrete plants.** - This permit may only authorize a storm water discharge associated with industrial activity from a construction site that is mixed with a storm water discharge from an industrial source other than construction, where:

1. The industrial source other than construction is located on the same site as the construction activity;

2. Storm water discharges associated with industrial activity from the areas of the site where construction activities are occurring are in compliance with the terms of this permit; and

3. Storm water discharges associated with industrial activity from the areas of the site where industrial activity other than construction are occurring (including storm water discharges from dedicated asphalt plants (other than asphalt emulsion facilities) and dedicated concrete plants) are in compliance with the terms, including applicable NOI or application requirements, of a different NPDES general permit or individual permit authorizing such discharges.

F. **Contractors**.

1. The storm water pollution prevention plan must clearly identify for each measure identified in the plan, the contractor(s) or subcontractor(s) that will implement the measure. All contractors and subcontractors identified in the plan must sign a copy of the certification statement in paragraph 2 below in accordance with Part VI.G (Signatory Requirements) of this permit. All certifications must be included in the storm water pollution prevention plan except for owners that are acting as contractor.

3. **Certification Statement**. All contractors and subcontractors identified in a storm water pollution prevention plan in accordance with paragraph 1 above shall sign a copy of the following certification statement before conducting any professional service at the site identified in the storm water pollution prevention plan:

   "I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR10) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification."

   The certification must include the name and title of the person providing the signature in accordance with Part VI.G of this permit; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification is made.

Part V. RETENTION OF RECORDS

A. The permittee shall retain copies of storm water pollution prevention plans and all reports and notices required by this permit, and records of all data used to complete the Notice of Intent to be covered by this permit, for a period of at least three years from the date that the permit coverage expires or is terminated. This period may be extended by request of the Agency at any time.

B. The permittee shall retain a copy of the storm water pollution prevention plan required by this permit at the construction site from the date of project initiation to the date of final stabilization.

Part VI. STANDARD PERMIT CONDITIONS

A. **Duty to Comply**.

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Illinois Environmental Protection Act and the CWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

B. **Continuation of the Expired General Permit**. This permit expires five years from the date of issuance. An expired general permit continues in force and effect until a new general permit or an individual permit is issued. Only those facilities authorized to discharge under the expiring general permit are covered by the continued permit.

C. **Need to halt or reduce activity not a defense**. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. **Duty to Mitigate**. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. **Duty to Provide Information**. The permittee shall furnish within a reasonable time to the Agency or local agency approving sediment and erosion plans, grading plans, or storm water management plans; or in the case of a storm water discharge associated with industrial activity which discharges through a municipal separate storm sewer system with an NPDES permit, to the municipal operator of the system, any information which is requested to determine compliance with this permit. Upon request, the permittee shall also furnish to the Agency or local agency approving sediment and erosion plans, grading plans, or storm water management plans; or in the case of a storm water discharge associated with industrial activity which discharges through a municipal separate storm sewer system with an NPDES permit, to the municipal operator of the system, copies of records required to be kept by this permit.

F. **Other Information**. When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Agency, he or she shall promptly submit such facts or information.

G. **Signatory Requirements**. All Notices of Intent, storm water pollution prevention plans, reports, certifications or information either submitted to the Agency or the operator of a large or medium municipal separate storm sewer system, or that this permit requires be maintained by the permittee, shall be signed.

1. All Notices of Intent shall be signed as follows:

   a. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

   c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

2. All reports required by the permit and other information requested by the Agency shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Agency.

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

   c. **Changes to authorization**. If an authorization under paragraph I.C (Authorization) is no longer accurate because a different individual or position has responsibility for the overall operation of the construction site, a new authorization satisfying the requirements of paragraph I.C must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.

   d. **Certification**. Any person signing documents under this Part shall make the following certification:

      "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for

submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. **Penalties for Falsification of Reports**. Section 309(c)(4) of the Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or by both. Section 44(j)(4) and (5) of the Environmental Protection Act provides that any person who knowingly makes any false statement, representation, or certification in an application form, or form pertaining to a NPDES permit commits a Class A misdemeanor, and in addition to any other penalties provided by law is subject to a fine not to exceed $10,000 for each day of violation.

I. **Penalties for Falsification of Monitoring Systems**. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment described in Section 309 of the CWA. The Environmental Protection Act provides that any person who knowingly renders inaccurate any monitoring device or record required in connection with any NPDES permit or with any discharge which is subject to the provisions of subsection (f) of Section 12 of the Act commits a Class A misdemeanor, and in addition to any other penalties provided by law is subject to a fine not to exceed $10,000 for each day of violation.

J. **Oil and Hazardous Substance Liability**. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the CWA.

K. **Property Rights**. The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

L. **Severability**. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

M. **Transfers**. This permit is not transferable to any person except after notice to the Agency. The Agency may require the discharger to apply for and obtain an individual NPDES permit as stated in Part I.C (Authorization).

N. **Requiring an Individual Permit or an Alternative General Permit**.

1. The Agency may require any person authorized by this permit to apply for and/or obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. Where the Agency requires a discharger authorized to discharge under this permit to apply for an individual NPDES permit, the Agency shall notify the discharger in writing that a permit application is required. This notification shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the discharger to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. Applications shall be submitted to the Agency indicated in Part II.D (Where to Submit) of this permit. The Agency may grant additional time to submit the application upon request of the applicant. If a discharger fails to submit in a timely manner an individual NPDES permit application as required by the Agency under this paragraph, then the applicability of this permit to the individual NPDES permittee is automatically terminated at the end of the day specified by the Agency for application submittal. The Agency may require an individual NPDES permit based on:

   a. information received which indicates the receiving water may be of particular biological significance pursuant to 35 Ill. Adm. Code 302.105(d)(6);

   b. whether the receiving waters are impaired waters for suspended solids, turbidity or siltation as identified by the Agency's 303(d) listing;

   c. size of construction site, proximity of site to the receiving stream, etc.

   The Agency may also require monitoring of any storm water discharge from any site to determine whether an individual permit is required.

2. Any discharger authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. In such cases, the permittee shall submit an individual application in accordance with the requirements of 40 CFR 122.26(c)(1)(ii), with reasons supporting the request, to the Agency at the address indicated in Part II.D (Where to Submit) of this permit. The request may be granted by issuance of any individual permit or an alternative general permit if the reasons cited by the permittee are adequate to support the request.

3. When an individual NPDES permit is issued to a discharger otherwise subject to this permit, or the discharger is authorized to discharge under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to a discharger otherwise subject to this permit, or the discharger is denied for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee remains in effect, unless otherwise specified by the Agency.

O. **State/Environmental Laws**. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

P. **Proper Operation and Maintenance**. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

Q. **Inspection and Entry**. The permittee shall allow the IEPA, or an authorized representative upon presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

R. **Permit Actions**. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Part VII. REOPENER CLAUSE

A. If there is evidence indicating potential or realized impacts on water quality due to any storm water discharge associated with industrial activity covered by this permit, the discharger may be required to obtain an individual permit or an alternative general permit in accordance with Part I.C (Authorization) of this permit or the permit may be modified to include different limitations and/or requirements.

B. Permit modification or revocation will be conducted according to provisions of 35 Ill. Adm. Code, Subtitle C, Chapter I and the provisions of 40 CFR 122.62, 122.63, 122.64 and 124.5 and any other applicable public participation procedures.

C. The Agency will reopen and modify this permit under the following circumstances:

1. the U.S. EPA amends its regulations concerning public participation;

2. a court of competent jurisdiction binding in the State of Illinois or the 7th Circuit issues an order necessitating a modification of public participation for general permits; or

3. to incorporate federally required modifications to the substantive requirements of this permit.

Part VIII. DEFINITIONS

"Agency" means the Illinois Environmental Protection Agency.

"Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"Commencement of Construction" - The initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

"CWA" means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. (96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.)

"Dedicated portable asphalt plant" - A portable asphalt plant that is located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR 443.

"Dedicated portable concrete plant" - A portable concrete plant that is located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

"Dedicated sand or gravel operation" - An operation that produces sand and/or gravel for a single construction project.
"Director" means the Director of the Illinois Environmental Protection Agency or an authorized representative.

"Final Stabilization" means that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 70% the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent stabilization measures (such as the use of riprap, gabions or geotextiles) have been employed.

"Large and Medium municipal separate storm sewer system" means all municipal separate storm sewers that are either:

(i) Located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and G of 40 CFR Part 122); or

(ii) Located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (these counties are listed in Appendices H and I of 40 CFR Part 122); or

(iii) Owned or operated by a municipality other than those described in paragraph (i) or (ii) and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

"NOI" means notice of intent to be covered by this permit (see Part II of this permit.)

"Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

"Runoff coefficient" means the fraction of total rainfall that will appear at the conveyance as runoff.

"Storm Water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

"Storm Water Associated with Industrial Activity" means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program. For the categories of industries identified in subparagraphs (i) through (x) of this subsection, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in subparagraph (xi), the term includes only storm water discharges from all areas listed in the previous sentence (except access roads) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water. For the purposes of this paragraph, material handling activities include the: storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally or municipally owned or operated that meet the description of the facilities listed in this paragraph (i)- (xi)) include those facilities designated under 40 CFR 122.26(a)(1)(v). The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

(i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards which are exempted under category (xi) of this paragraph);

(ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28, 29, 311, 32, 33, 3441, 373;

(iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations meeting the definition of a reclamation area under 40 CFR 434.11(l)) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but which have an identifiable owner/operator;

(iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;

(v) Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under Subtitle D of RCRA;

(vi) Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;

(vii) Steam electric power generating facilities, including coal handling sites;

(viii) Transportation facilities classified as Standard Industrial Classifications 40, 41, 42, 44, and 45 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under subparagraphs (i)-(vii) or (ix)-(xi) of this subsection are associated with industrial activity;

(ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with 40 CFR 503;

(x) Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than one acre of total land area which are not part of a larger common plan of development or sale unless otherwise designated by the Agency pursuant to **Part I.**B.1.

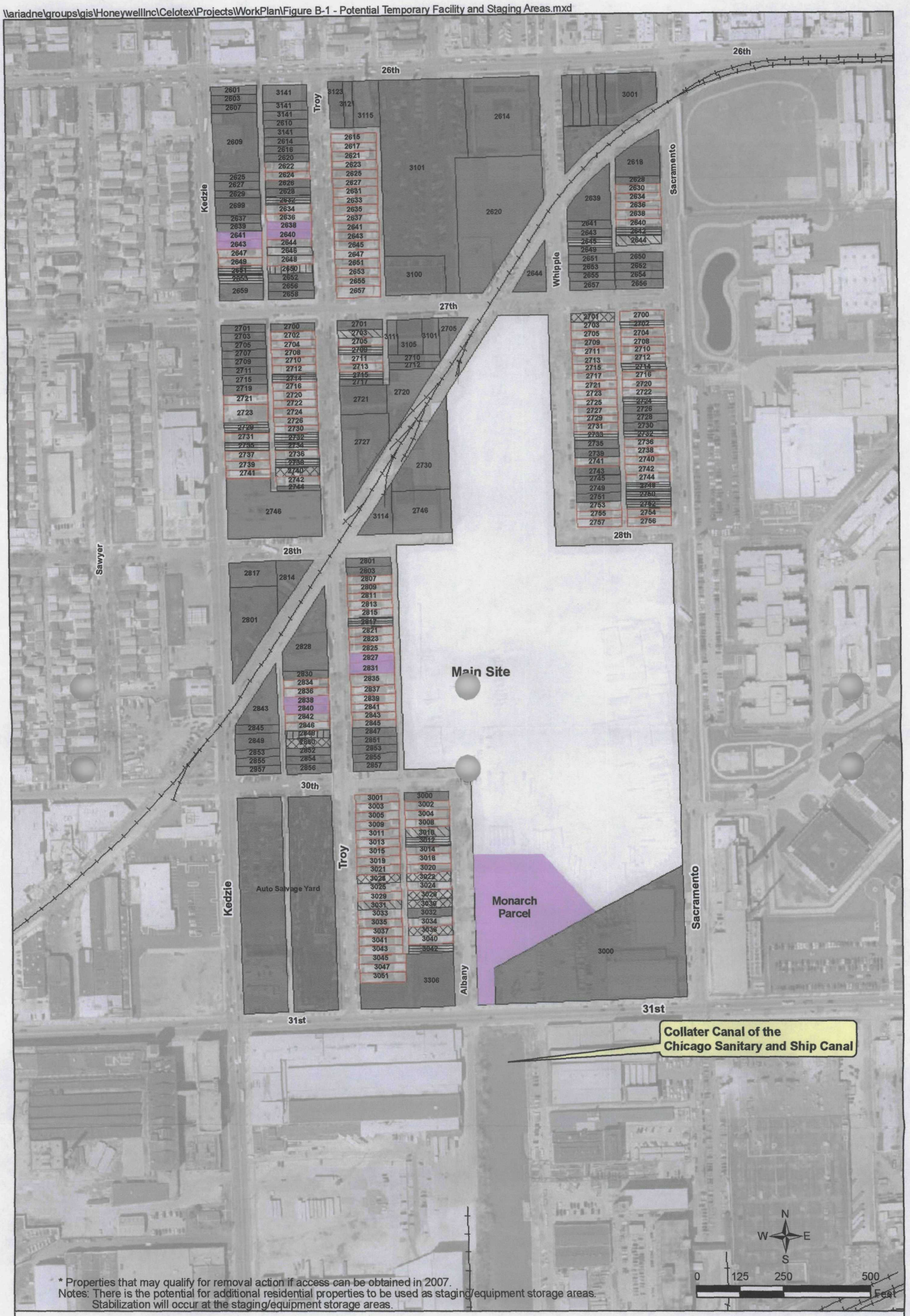
(xi) Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 31 (except 311), 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included within categories (i)-(x)).

"Waters" mean all accumulations of water, surface and underground, natural, and artificial, public and private, or parts thereof, which are wholly or partially within, flow through, or border upon the State of Illinois, except that sewers and treatment works are not included except as specially mentioned; provided, that nothing herein contained shall authorize the use of natural or otherwise protected waters as sewers or treatment works except that in-stream aeration under Agency permit is allowable.

APPENDIX B

General Site Location Map

\\ariadne\groups\gis\HoneywellInc\Celotex\Projects\WorkPlan\Figure B-1 - Potential Temporary Facility and Staging Areas.mxd



* Properties that may qualify for removal action if access can be obtained in 2007.
Notes: There is the potential for additional residential properties to be used as staging/equipment storage areas.
Stabilization will occur at the staging/equipment storage areas.

Legend

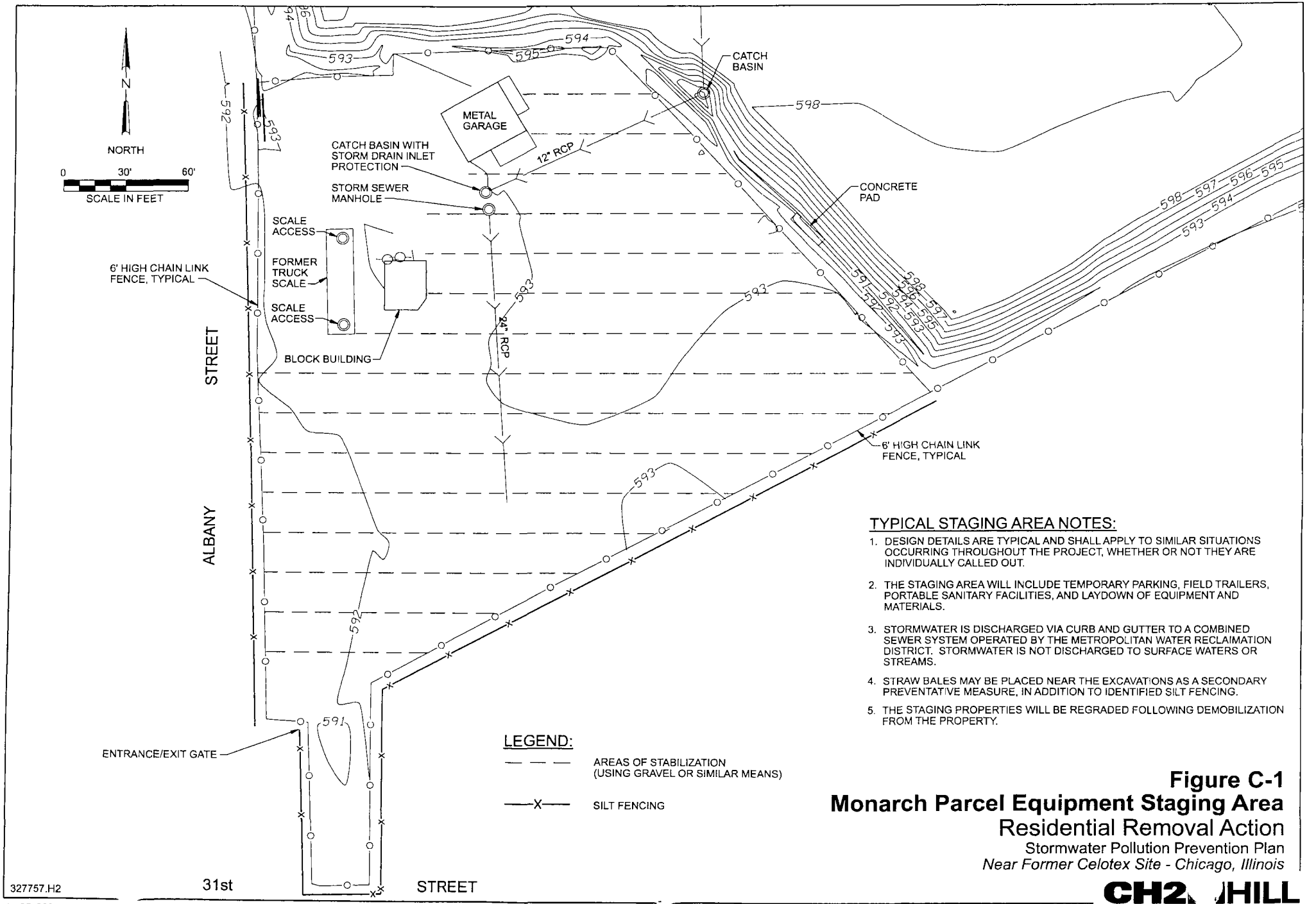
- Potential Staging/Equipment Storage Areas
- Industrial or Commercial Property
- Property with no exposed soil
- Property owner declined access
- Proposed Removal Action Property (Potential Soil Disturbance)
- No response from owner/tenants*
- Not able to arrange access for sampling*
- Property with BAPEQ concentrations below 2 ppm

Figure B-1
Potential Staging/Equipment Storage Areas and Soil Disturbance Areas
Stormwater Pollution Prevention Plan
Residential Removal Action
Near Former Celotex Site - Chicago, Illinois

CH2MHILL

APPENDIX C

Detailed Area Drawings



TYPICAL STAGING AREA NOTES:

1. DESIGN DETAILS ARE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
2. THE STAGING AREA WILL INCLUDE TEMPORARY PARKING, FIELD TRAILERS, PORTABLE SANITARY FACILITIES, AND LAYDOWN OF EQUIPMENT AND MATERIALS.
3. STORMWATER IS DISCHARGED VIA CURB AND GUTTER TO A COMBINED SEWER SYSTEM OPERATED BY THE METROPOLITAN WATER RECLAIMATION DISTRICT. STORMWATER IS NOT DISCHARGED TO SURFACE WATERS OR STREAMS.
4. STRAW BALES MAY BE PLACED NEAR THE EXCAVATIONS AS A SECONDARY PREVENTATIVE MEASURE, IN ADDITION TO IDENTIFIED SILT FENCING.
5. THE STAGING PROPERTIES WILL BE REGRADED FOLLOWING DEMOBILIZATION FROM THE PROPERTY.

Figure C-1
Monarch Parcel Equipment Staging Area
Residential Removal Action
Stormwater Pollution Prevention Plan
Near Former Celotex Site - Chicago, Illinois

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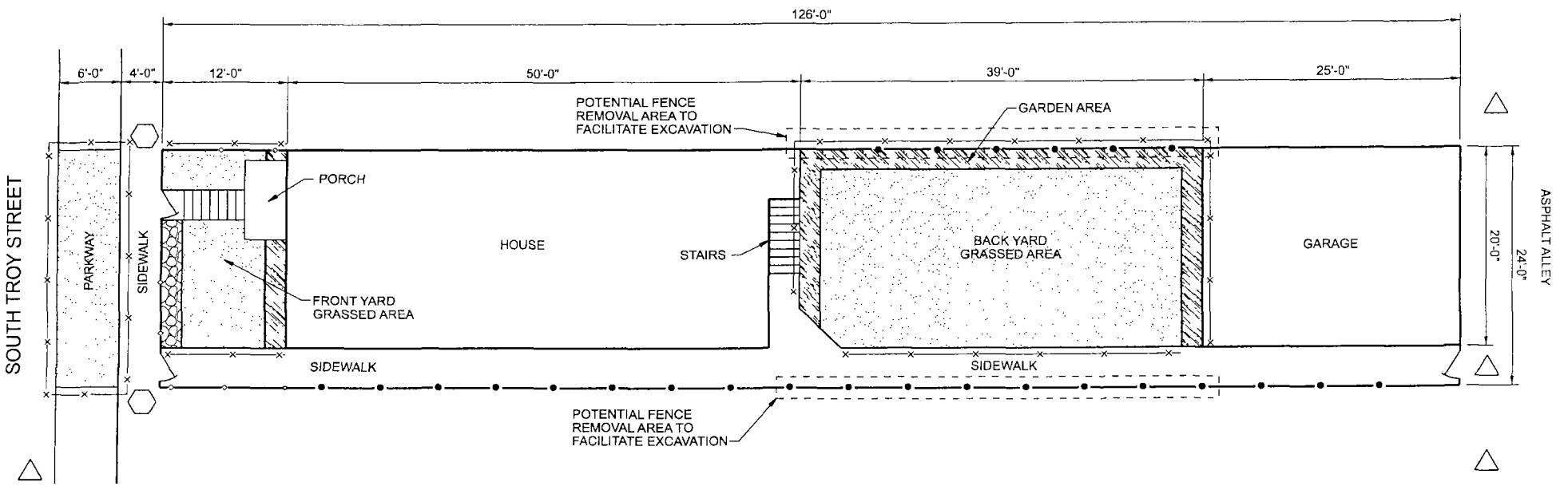

LEGEND:

- GRASSED AREAS (AREA FOR POTENTIAL EXCAVATION)
- GARDEN AREAS (AREA FOR POTENTIAL EXCAVATION)
- DECORATIVE ROCK AREAS (AREA FOR POTENTIAL EXCAVATION)
- GATE
- WOOD FENCE
- CHAIN-LINK FENCE
- ORANGE PLASTIC CONSTRUCTION BARRIER FENCE AND SILT FENCING
- HIGH-LEVEL WARNING FLAGS
- SIDEWALK CLOSED SIGN

TYPICAL EXCAVATION DETAIL NOTES:

1. DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
2. EXCAVATION IS LIMITED TO EXPOSED SOIL AREAS. NO STRUCTURES, ASPHALT, PAVEMENT, ETC. WILL BE REMOVED.
3. STORM WATER IS DISCHARGED VIA CURB AND GUTTER TO A COMBINED SEWER SYSTEM OPERATED BY THE METROPOLITAN WATER RECLAIMATION DISTRICT. STORMWATER IS NOT DISCHARGED TO SURFACE WATER OR STREAMS.
4. STRAW BALES MAY BE PLACED NEAR THE EXCAVATIONS AS A SECONDARY PREVENTATIVE MEASURE, IN ADDITION TO IDENTIFIED SILT FENCING.
5. STABILIZATION PRACTICES (I.E. SODDING) WILL OCCUR FOLLOWING EXCAVATION, BACKFILL AND REGRADING.

DRAWING NOTES:

1. SIDEWALK AND PARKWAY WIDTH IS ESTIMATED.
2. PROPERTY DIMENSIONS ARE APPROXIMATE.

N

NORTH

0 7.5' 15'

SCALE IN FEET

Figure C-2
Conceptual Residential Excavation Plan
Residential Removal Action

Stormwater Pollution Prevention Plan

Near Former Celotex Site - Chicago, Illinois

CH2M HILL

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APPENDIX D

SWP3 Inspection Checklist

SWP3 Inspection Checklist

Location of Inspection: _____ Date: _____

Inspector: _____ Company: _____

Inspection Procedure	Yes/No	Comments	Date of Corrective Action	Corrective Action Taken
Is there any evidence of sediment leaving the construction site? If so, note areas.				
Have any adverse impacts, such as, flooding, structural damage, erosion, spillage, or accumulation of sediment, debris, or litter occurred on adjacent property, wetlands, or surface waters?				
Have the storm water BMPs been placed properly and effectively?				
Are the storm water BMPs functioning as intended?				
Is there evidence of discharges or spills of fuels or lubricants?				

APPENDIX E

List of Materials Stored Onsite Form

LIST OF MATERIALS STORED ONSITE

Project Name: _____Celotex Residential Removal Action_____ Date: _____

Description of Material	Period on Site	Quantity	Location of Storage	Method of Storage	Description of Material Management Practices

APPENDIX F

Contractor Certification

Certification

"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR10) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification."

Signature:

_____

Name (Printed or Typed):

_____

Title:

_____

Certification Date:

_____

Company:

_____

Address:

_____

Telephone Number:

_____

Site Address:

2800 South Sacramento, Chicago, IL, 60623

APPENDIX G

SWP3 Certification

Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature:

Name (Printed or Typed):

Title:

Certification Date:

APPENDIX H

Miscellaneous Forms

MAJOR GRADING RECORDS

Location: _____

DATE STARTED	DATE ENDED	LOCATION	REMARKS

STABILIZATION RECORDS

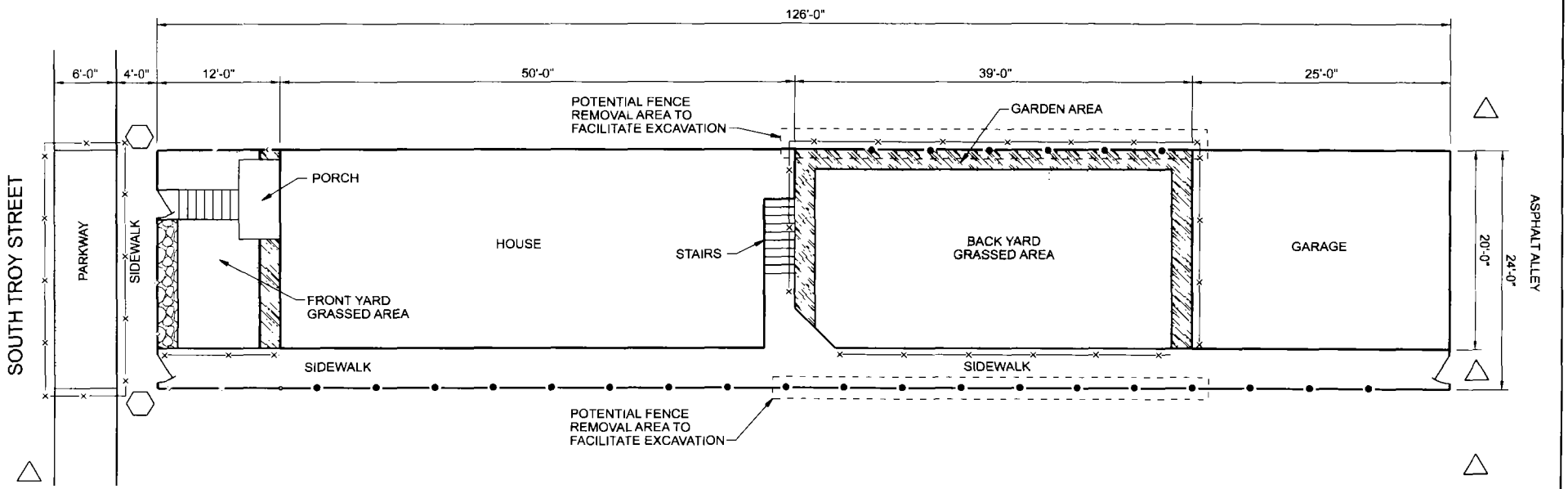
Location: _____

TYPE	DATE STARTED	DATE ENDED	LOCATION	REMARKS

TEMPORARY OR PERMANENT STOP WORK RECORDS

Location: _____

TEMPORARY OR PERMANENT	DATE STARTED	DATE ENDED	LOCATION	REMARKS



TYPICAL EXCAVATION DETAIL NOTES:

1. DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATION OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
2. EXCAVATION IS LIMITED TO ONE (1) FOOT OFFSET FROM STRUCTURES, AND SIDEWALKS - IN CERTAIN CASES WHERE FOUNDATION FOOTINGS ARE WIDER OR SOME OTHER STRUCTURAL INTERFERENCE IS ENCOUNTERED, THE OFFSET MAY HAVE TO BE INCREASED AN ADDITIONAL 1-2 FEET.
3. EXCAVATION PARALLEL OR ADJACENT TO STRUCTURES WILL MAINTAIN A NOMINAL 45-DEGREE (1:1) SLOPE FROM GRADE TO SPECIFIED DEPTH OF EXCAVATION.
4. EXCAVATION WILL BE LIMITED TO ONE (1) FOOT AWAY (MORE OR LESS) FROM PROPERTY LINES.
5. DEPTH OF EXCAVATION WITHIN THE DRIPLINE OF DESIGNATED TREES WILL BE LIMITED TO 6 INCHES OR LESS DEPENDING ON THE DEGREE OF ROOT INTERFERENCE AND/OR POTENTIAL DAMAGE TO THE TREE.
6. FENCES WILL BE OFFSET BY APPROXIMATELY 6 INCHES MORE OR LESS IN ORDER TO AVOID DAMAGE TO THE FENCE OR INTERFERENCE WITH THE ADJACENT PROPERTY.
7. ABOVE GROUND STRUCTURES SUCH AS SWIMMING POOLS, STORAGE SHEDS, AND GAZEBOS WILL NOT BE RELOCATED OR MOVED. EXCAVATION ACTIVITIES WILL OCCUR AROUND SUCH ELEMENTS.
8. SOIL EXCAVATION WILL INCLUDE THE USE OF MECHANICAL AND/OR MANUAL MEANS AND METHODS DEPENDING ON ACCESS RESTRICTIONS.
9. EXCAVATION IS LIMITED TO EXPOSED SOIL AREAS. NO STRUCTURES, ASPHALT, PAVEMENT, ETC. WILL BE REMOVED.

DRAWING NOTES:

1. SIDEWALK AND PARKWAY WIDTH IS ESTIMATED.
2. PROPERTY DIMENSIONS ARE APPROXIMATE.

LEGEND:

- GRASSED AREAS (AREA FOR POTENTIAL EXCAVATION)
- GARDEN AREAS (AREA FOR POTENTIAL EXCAVATION)
- DECORATIVE ROCK AREAS (AREA FOR POTENTIAL EXCAVATION)
- GATE
- WOOD FENCE
- CHAIN-LINK FENCE
- ORANGE PLASTIC CONSTRUCTION BARRIER FENCE
- HIGH-LEVEL WARNING FLAGS
- SIDEWALK CLOSED SIGN

DRAFT

N

NORTH

0 7.5' 15'

SCALE IN FEET

Figure 2-2
Conceptual Residential Excavation Plan
Residential Remedial Action Work Plan
Former Celotex Site

Chicago, Illinois

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